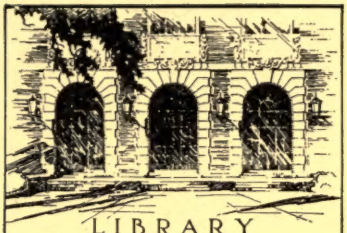

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Financial Position of A Representative Group of McHenry County Farmers

In the Dairy Region of Northern Illinois 1940-1942

By
B. D. Parrish
and
L. J. Norton

Bulletin 512 : UNIVERSITY OF ILLINOIS
AGRICULTURAL EXPERIMENT STATION

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Urbana, Illinois June, 1945

Publications in the Bulletin series report the results of investigations made or sponsored by the Experiment Station

Financial Position of a Representative Group of McHenry County Farmers: 1940-1942

By B. D. Parrish and L. J. Norton[1]

LARGE OUTLAYS of capital are essential in modern agriculture. To finance the ownership of farm land, to provide essential improvements, and to acquire the working capital to farm the land and so stock it as to utilize the crops to the best advantage require huge sums. The value of the capital involved in the ownership of farm land in Illinois and the working capital needed for its operation was about 3.2 billion dollars in 1940. Of this sum 2.5 billion dollars represented the value of land and buildings, and .7 billion dollars the value of livestock, equipment, grain, etc. In 1943 wartime prices had increased the total by more than one-third.

The individuals who own the land or operate it are the ones who must provide the capital needed for the farming enterprise. Altho most economic studies of farming have taken for granted the ability of individuals to finance their farms, it is well known that inability to do so prevents ownership in many cases and cramps operations in other cases.

PURPOSE AND SCOPE OF STUDY

The original purpose of the present study was to find answers to such questions as these: How much capital is involved in the ownership and operation of typical Illinois farms? How is it distributed among the various factors of production? Who furnishes this capital? How do farmers who are short of capital finance their operations?

The farms studied were located in McHenry county, Illinois, about 70 miles northwest of Chicago in the milkshed of that city. The period was 1940-1942. As the selected farms were representative of the farms in the county, the findings are believed to apply to the county as a whole and to other similar territory. Some of the findings are general enough to suggest relationships that apply over much wider areas.

Any economic study is necessarily restricted to a given period of

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time, some studies to very short times. This fact must be given full weight in any generalizations that are drawn from such studies, for conditions can and do change drastically even in comparatively short periods. The time covered by this study, 1940-1942, was one of rising prices, good crops in the area where the farms are located, and rising incomes. The relationships found between the various factors analyzed in this study will of course apply only to periods when similar conditions prevail. If incomes had been shrinking, quite different relationships would probably have been found. Studies extending over a long enough period to cover a complete cycle of change from low incomes to high and back to low would of course have more value.

This study, however, has interest aside from that suggested by its original purposes. It shows the financial positions and operations of a typical group of farmers just before the country became involved in war, the response which farmers made to the Food-for-Victory program launched in the first year of the war, and the effect which the first year of the war had on farmers differently situated with respect to finances and to tenure—some with ample capital and some short of capital, some out of debt and some heavily in debt, some tenants and some owners, some operators of a small farming enterprise and some of a large enterprise. How did these farmers respond to the calls for greater production? How much were operators who were short of capital hindered in their efforts to expand? These questions are of great public importance, as is also another question: How did these different groups make use of the enlarged earnings which higher prices and expanded production brought them? Answers to these and many other questions besides those which the study was originally designed to answer are to be found in the data here presented.

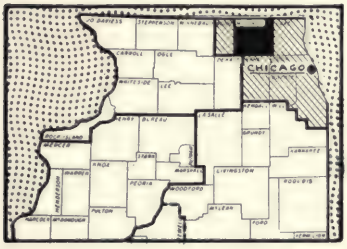
Collection and analysis of data. The basic data for this study were collected by the survey method from 124 farms in 1940, 146 farms in 1941, and 118 farms in 1942.[1]

The data regarding assets, debts, net worth, and debt ratios, as well as income and expense, include only the operator's share of the farm business, except in the section dealing with total 1942 farm income. Data regarding size of farm, productivity, land use, and the dairy herd refer to the entire farm unit and not merely to the operator's share.

[1]The records were collected by B. D. Parrish in 1940, by Parrish and others in 1941, and by Parrish and R. A. Kelly in 1942. The farms were a random sample. Methods used in selecting the samples are discussed on pages 584-586.

The data were analyzed statistically by first sorting them on the basis of such factors as tenure of operator, percentage of capital borrowed (debt ratio), and size of business. When sorting was done by the last two factors, the records of owners (including part owners) and tenants were kept separate. Various items for all the farms in a given group were then averaged. The statistical significance of a number of the resulting averages was calculated in order to help the investigators to decide what differences were important, but the results of these calculations are not included in this publication. The stability of the difference is of great importance in indicating valid relationships. Three years of data present opportunities for checking such stability.

General features of area in which study was made. McHenry county, located on the Illinois-Wisconsin border, is the second county west of Lake Michigan. Production of milk for the Chicago market is the major farm enterprise. Hogs and poultry are kept on most farms, and a few farmers either feed cattle or keep rather large flocks of poultry. The land ranges from level to hilly, but much of it is rolling. Corn, small grains, and legume hay are the main crops and are largely fed on the farms where grown. Except for protein supplements, only small amounts of feedstuffs are purchased. In brief, farming in this county is essentially an intensive milk-producing enterprise in which most of the feed is raised on the farms where it is fed.



Many opportunities for nonfarm employment exist in this area, especially in the industries located in the county seat, Woodstock. Proximity to Chicago and its suburbs has caused labor to be drawn off these farms more rapidly than from farms in areas more remote from urban centers. It is not surprising, therefore, that but little surplus labor—either male or female—was found on these farms at the time of the survey, a period when industry was active.

Farming in this county, as in Illinois generally, is organized on a family basis, only a moderate amount of hired labor being utilized, usually not more than one hired man to a farm. The high labor requirements of the dairy enterprise make it possible, and often necessary, to use considerable family labor. The operation of the farms surveyed in 1940 required an average of 22 months of labor, 6 months of it hired labor and 16 months of it family labor, including the labor of the operator.

CAPITAL POSITION OF OPERATORS

Positions of Owners and Operators Contrasted

The problem of supplying capital varies with the tenure of the operator. The owner-operator must finance the land and improvements and working capital. The tenant needs only to finance his working capital, in whole or in part, and in some cases to finance minor improvements. The part owner occupies an intermediate position between these two groups.

The farms studied were classified first on the basis of the tenure of their operators; the yearly distribution of those included was as follows:

	Owners	*Part owners*	*Tenants*	*Total*
1940	45	14	63	122
1941	51	16	79	146
1942	43	18	57	118

Since the proportions in the different tenure and debt classifications were similar in the other years, the 1941 sample, which was the largest, was taken as representative (Table 1). On December 31 of that year 20 percent of these farmers reported no debts. A slightly higher proportion of tenants than of owners reported no debts, a fact that reflects the lower capital requirements of tenants.

The general summary of the capital position of the different tenure groups for each of the three years (Table 2) shows that: (1) the owners and part owners had larger assets because they had more working capital and because they were financing all or part of their real estate; (2) the part owners were the most heavily indebted group; (3) among tenants, the cash-rent group had larger assets than the livestock-share group, as the cash tenants had to furnish all their working capital; (4) the share tenants owning less than half the cows

TABLE 1.—ONE HUNDRED FORTY-SIX FARMERS IN MCHENRY COUNTY, ILLINOIS, REPORTING DIFFERENT CLASSES OF DEBTS ON DECEMBER 31, 1941

	Owners		Part owners		Tenants		All	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Farmers, total	51	100	16	100	79	100	146	100
Farmers with—								
No debts	10	20	1	6	18	23	29	20
Debts	41	80	15	94	61	77	117	80
Long-term debts	33	65	15	94	4	5	51	35
Short-term debts	31	61	10	62	60	76	101	69
Both long- and short-term debts	23	45	10	62	3	4	35	24

TABLE 2.—CAPITAL POSITION OF 146 OWNERS, PART OWNERS, AND TENANTS, 1940, 1941, AND 1942
(Average of beginning and ending inventories each year)

	Owners	Part owners	Cash and crop-share tenants	Livestock-share tenants	
				Owning half of cows	Owning less than half of cows
1940					
Number of farms	45	14	40	14	9
Assets	$22 892	$23 988	$6 652	$5 054	$3 982
Liabilities	4 998	7 896	1 148	1 801	426
Net worth	17 894	16 092	5 504	3 253	3 556
1941					
Number of farms	51	16	50	21	8
Assets	$24 670	$24 635	$7 780	$5 093	$5 137
Liabilities	5 932	8 355	1 568	1 439	392
Net worth	18 738	16 280	6 212	3 654	4 745
1942					
Number of farms	43	18	37	13	7
Assets	$25 018	$26 079	$8 339	$6 622	$6 570
Liabilities	5 085	6 375	1 302	1 381	438
Net worth	19 933	19 704	7 037	5 241	6 132

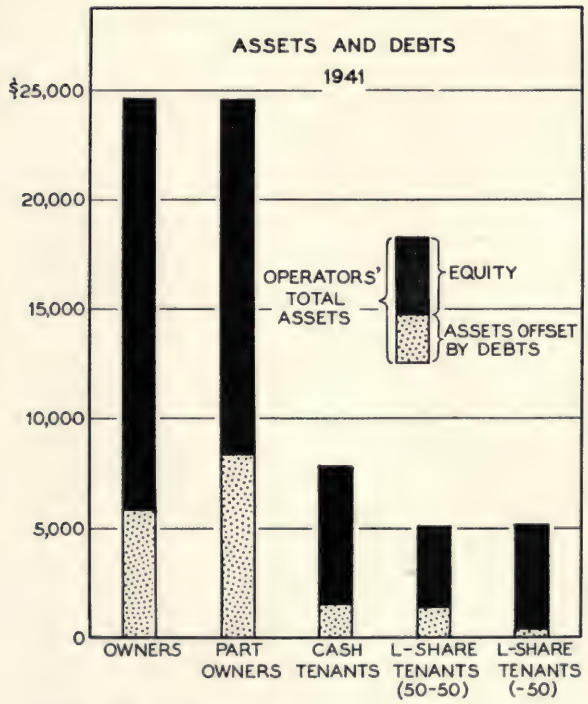


Fig. 1.—Capital and debt positions of operators in 1941. These farmers owned a large share of the capital they used.

TABLE 3.—CAPITAL POSITION OF 146 OWNERS, PART OWNERS, AND TENANTS ON DECEMBER 31, 1941

Item	Owners	Part owners	Cash tenants[a]	Livestock-share tenants	
				Owning half of cows	Owning less than half of cows
Number of farms	51	16	50	21	8
Assets					
Land and improvements	$16 060	$15 479	$ 0	$ 0	$ 0
Machinery and equipment	2 170	2 374	1 923	1 923	2 209
Horses	271	259	307	313	304
Dairy cattle	2 827	3 313	2 892	1 861	748
Other livestock	550	524	485	237	420
Feed and grain	2 026	2 464	1 653	1 046	1 644
Insurance, etc.	265	235	185	66	350
Total current assets	8 109	9 169	7 445	5 446	5 675
Total farm assets	24 169	24 648	7 445	5 446	5 675
Other investments	1 266	944	1 299	2	194
Total assets	$25 435	$25 592	$8 744	$5 448	$5 869
Liabilities					
First land mortgage	$ 4 189	$ 5 439	$ 0	$ 0	$ 0
Second land mortgage	703	1 444	0	0	0
Other long-term debts	128	0	547	0	0
Total long-term debts	5 020	6 883	547	0	0
Chattel mortgages	141	530	917	729	0
Conditional sales	101	129	93	264	0
Personal notes	392	536	208	235	100
Unsecured debts	5	52	31	106	287
Interest in arrears	4	20	10	41	1
Principal in arrears	18	18	0	2	0
Other debts	11	0	7	3	0
Total short-term debts	672	1 285	1 266	1 380	388
Total liabilities	$ 5 692	$ 8 168	$1 813	$1 380	$ 388
Net worth	19 743	17 424	6 931	4 068	5 481
Net worth and liabilities	$25 435	$25 592	$8 744	$5 448	$5 869
Debt ratio, percent					
Total debts to total assets	22	32	21	25	7
Short-term debts to current assets	8	14	17	25	7
Long-term debts to land and improvements	31	44	...	...	...
Size—acres owned	138	122	0	0	0
—acres operated	138	182	146	156	192
—number of cows milked	20.8	23.0	22.1	26.5	32.8

[a]The data concerning two crop-share tenants were included in those for cash tenants.

were the least indebted group. The light debts of the share group indicated how much simpler a tenant's financial problem is when the landlord assumes part of the financial responsibility for the operation of the farm. These facts are shown graphically in Fig. 1.

These data indicate what is to be expected—that farmers who have adequate capital are likely to be land owners, while those who are short of capital are likely to be tenants. It should be noted, however, that in 1942 these various groups of tenants had assets averaging $6,600 to $8,300. Thus even when the operator does not own the land, his capital requirements in this area are high.

The distribution of the operator's capital in each of the five tenure groups on December 31, 1941, is shown in Table 3. Noticeable are the large investments of the owners and part owners in land; the smaller investments of the livestock-share tenants in dairy cattle, particularly

by those who owned less than half the cows; the generally lighter investments of the tenants in machinery and equipment, other livestock, and feed and grain; and the general tendency for owners and part owners to have larger current assets than the tenants. The owners and cash tenants operated the smallest farms; the livestock-share tenants owning half the cows operated somewhat larger farms; and the part owners and the livestock-share tenants owning less than half the cows operated the largest farms.

On December 31, 1941, the equities of these operators in their assets were as follows: livestock-share tenants owning less than half the cows owned 93 percent of their assets; cash tenants owned 79 percent of their assets; full owners, 78 percent; "50-50" livestock-share tenants, 75 percent; part owners, 68 percent. The part owners were using borrowed funds more extensively than were the other groups. Presumably these men were formerly tenants who had borrowed in order to buy land.

Progress during the period. Since the farms included in the study were not exactly the same each year, the best index to the progress of each group of operators is the change that took place in their capital position between the beginning and the end of each year (Tables 4 and 5).

The reason the land item changed so little was that no allowance was made for any increases in land value during the year. But for both the combined owner and part-owner groups and for the combined tenant groups, current assets in all principal classes increased in each of the three years. The largest increases were in livestock—both dairy cattle and other livestock—and in feed and grain. Thruout the period both groups increased their assets each year, the increases being larger in 1941 and 1942 than in 1940. It is noteworthy that owners and tenants increased their assets about the same amount.

The tenants were able to increase their assets as rapidly as the owners by following different debt policies. Thruout this period the owners were reducing their debts: by an average of $134 in 1940, $455 in 1941, and $914 in 1942. The tenants were increasing their debts in 1940 and 1941 and just about maintaining them in 1942.

The owners increased their net worth more than did the tenants. But in relation to capital invested, the rate of increase in the tenants' net worth was more than double that of the owners:

	Tenants	*Owners*
1940	12.8	4.6
1941	31.1	13.0
1942	33.3	17.1

TABLE 4.—CHANGES IN CAPITAL POSITION OF OWNERS AND PART OWNERS EACH YEAR, 1940, 1941, AND 1942

	1940		1941		1942	
	Beginning	End	Beginning	End	Beginning	End
Number of farms	59		67		61	
Assets						
Land and improvements	$15 839	$15 817	$15 961	$15 921	$15 258	$15 155
Machinery and equipment	1 698	1 897	1 943	2 219	2 157	2 234
Horses	288	297	268	268	282	322
Dairy cattle	2 088	2 223	2 251	2 943	2 997	3 953
Other livestock	357	379	360	543	527	731
Feed and grain	1 375	1 668	1 656	2 131	2 131	2 331
Insurance, etc.	217	233	249	258	299	288
Total current assets	6 023	6 697	6 727	8 362	8 393	9 859
Total farm assets	21 862	22 514	22 688	24 283	23 651	25 014
Other investments	997	933	1 163	1 190	904	1 075
Total assets	$22 859	$23 447	$23 851	$25 473	$24 555	$26 089
Liabilities						
First land mortgage	$ 4 287	$ 4 126	$ 4 763	$ 4 488	$ 4 252	$ 3 641
Second land mortgage	775	694	967	880	924	827
Other long-term debts	0	0	106	97	0	0
Total long-term debts	5 062	4 820	5 836	5 465	5 176	4 468
Chattel mortgages	320	315	325	234	223	210
Conditional sales	8	75	68	108	89	22
Personal notes	326	348	447	426	377	266
Unsecured debts	11	10	12	16	17	17
Interest in arrears	1	3	2	8	9	6
Principal in arrears	22	43	40	14	20	9
Other debts	3	5	9	13	10	9
Total short-term debts	691	799	903	819	745	539
Total liabilities	$ 5 753	$ 5 619	$ 6 739	$ 6 284	$ 5 921	$ 5 007
Net worth	17 106	17 828	17 112	19 189	18 634	21 082
Net worth and liabilities	$22 859	$23 447	$23 851	$25 473	$24 555	$26 089
Changes						
Increase in assets		$588		$1 622		$1 534
Decrease in liabilities		134		455		914
Increase in net worth						
Excluding cash		722		2 077		2 448
Including cash		809		2 361		3 388
Percent increase with cash		4.6		13.0		17.1
Debt ratio, percent						
Total debts to total assets		24.0		28.3		24.1
Short-term debts to current assets		11.9		13.4		8.9
Long-term debts to land and improvements		30.5		36.6		33.9

The above percentages allow for apparent changes in cash position, as discussed on pages 552 and 553. The main reduction in debts was in real-estate mortgages.

At the bottom of page 531 are further details concerning net-worth differences between tenants and owners in each of the three years of the study.

Obviously this was a period of capital accumulation, reflecting both higher prices and increases in physical assets. Even tho the owners reduced their debts, increases in assets contributed more to increasing their net worth than did debt reduction. The high rate of returns on net worth indicates that in this period it paid to have the use of larger assets even if it was necessary to borrow in order to get them.

TABLE 5.—CHANGES IN CAPITAL POSITION OF TENANTS EACH YEAR, 1940, 1941, AND 1942

	1940		1941		1942	
	Beginning	End	Beginning	End	Beginning	End
Number of farms	63		79		57	
Assets						
Land and improvements	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0
Machinery and equipment	1 562	1 764	1 676	1 952	1 919	2 100
Horses	358	381	329	308	319	302
Dairy cattle	1 542	1 770	1 836	2 401	2 363	3 086
Other livestock	263	304	301	413	364	507
Feed and grain	1 094	1 335	1 252	1 491	1 404	1 585
Insurance, etc.	140	147	154	170	214	223
Total current assets	4 959	5 701	5 548	6 735	6 583	7 803
Total farm assets	4 959	5 701	5 548	6 735	6 583	7 803
Other investments	577	593	473	842	361	708
Total assets	$5 536	$6 294	$6 021	$7 577	$6 944	$8 511
Liabilities						
First land mortgage	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0
Second land mortgage	0	0	0	0	0	0
Other long-term debts	85	81	65	346	88	173
Total long-term debts	85	81	65	346	88	173
Chattel mortgages	635	814	858	775	660	656
Conditional sales	54	53	70	139	157	46
Personal notes	286	243	214	223	210	219
Personal debts	50	43	53	48	81	19
Interest in arrears	11	17	10	17	9	1
Principal in arrears	0	0	0	1	0	0
Other debts	0	6	5	5	10	98
Total short-term debts	1 036	1 176	1 210	1 208	1 127	1 039
Total liabilities	$1 121	$1 257	$1 275	$1 554	$1 215	$1 212
Net worth	4 415	5 037	4 746	6 023	5 729	7 299
Net worth and liabilities	$5 536	$6 294	$6 021	$7 577	$6 944	$8 511
Changes						
Increase in assets	$758		$1 556		$1 567	
Decrease in liabilities	(136[a])		(279[a])		3	
Increase in net worth						
Excluding cash	622		1 277		1 570	
Including cash	603		1 677		2 169	
Percent increase with cash	12.8		31.1		33.3	
Debt ratio, percent						
Total debts to total assets	20.0		21.2		17.5	
Short-term debts to current assets	20.6		21.8		17.1	
Long-term debts to land and improvements	....		....		....	

[a]Increase.

NET-WORTH DIFFERENCES BETWEEN OWNERS AND TENANTS

	Increase in net worth, including cash			*Percent increase in net worth, including changes in cash*		
	1940	*1941*	*1942*	*1940*	*1941*	*1942*
Owners	$ 737	$2 293	$3 107	4.1	12.2	15.6
Part owners	1 042	2 581	4 068	6.5	15.9	20.6
Cash tenants	787	1 916	2 418	14.3	30.8	34.4
Livestock-share tenants						
Owning 50 percent of cows	184	1 097	1 400	5.7	31.0	26.7
Owning less than 50 percent of cows	440	1 723	2 285	12.4	36.3	37.3

Operators With Different Debt Ratios

One indication of a farmer's financial position is the ratio of his debts to his assets, that is, the percentage which his debts are of the value of property he owns. In this analysis, figures for owners and part owners were combined, as were those for all classes of tenants. How did the size of debts in relation to assets affect the ability of a farmer to acquire further assets and to make financial progress?

Among the owners (Table 6 and Fig. 2) the total assets tended to be larger where debt ratios exceeded 20 percent than where they were less than 20 percent or where there were no debts. The more heavily indebted owners had more invested in land and improvements, somewhat more in machinery and equipment, and substantially more in dairy cattle. The cash values of their insurance policies also averaged lower. The owners possessing the largest assets also owned and operated the largest farms as measured in acres; particularly was this true for the 19 farmers with debt ratios of 40 percent and over. The 27 with debt ratios of 20 to 39 percent had slightly larger farms and slightly larger dairy herds, more valuable land, and more valuable cows than did those with lower debt ratios. This group also had a high rate of milk production per cow.

TABLE 6.—CAPITAL POSITION OF 67 OWNERS AND PART OWNERS WITH DIFFERENT DEBT-TO-PROPERTY RATIOS, DECEMBER 31, 1941

Debt ratio	0	1-19%	20-39%	40% and over
Number of farms	12	9	27	19
Assets				
Land and improvements	$14 694	$12 338	$16 195	$18 005
Machinery and equipment	2 045	1 805	2 189	2 568
Horses	222	262	286	274
Dairy cattle	2 320	2 342	3 172	3 295
Other livestock	668	310	479	667
Feed and grain	2 023	1 736	1 963	2 624
Insurance, etc.	375	472	280	53
Total current assets	7 653	6 927	8 369	9 481
Total farm assets	22 347	19 265	24 564	27 486
Other investments	1 917	2 306	701	895
Total assets	$24 264	$21 571	$25 265	$28 381
Liabilities				
First land mortgages	$ 0	$ 1 356	$ 4 845	$ 8 297
Second land mortgages	0	0	918	1 799
Other long-term debts	0	0	0	343
Total long-term debts	0	1 356	5 763	10 439
Total short-term debts	103[a]	329	739	1 616
Total debts	103	1 685	6 502	12 055
Net worth	$24 161	$19 886	$18 763	$16 326
Average debt ratio, percent	0	8.0	26.0	42.0
Size—acres owned	121	117	125	164
—acres operated	127	122	134	195
—number of cows milked	19.2	21.8	20.9	23.2

[a]Farms with no debts at the beginning of the year were classified in this group.

These figures suggest either that owners with high debt ratios had borrowed to acquire larger businesses, or that the larger businesses tended to keep the owners in debt. The survey does not show definitely which of these two explanations is correct. It is clear, however, that enough loan capital was available to permit the owners of the larger farms to acquire or to hold their added assets.

Among the tenants (Table 7) the relation between size of farm and debt ratio was the reverse of that among owners. The less heavily indebted tenant operators and those that had no indebtedness possessed more assets and had larger businesses as measured by the number of cows, investments in machinery and equipment, and in feed and grain. However, the more heavily indebted tenants had larger investments in dairy cattle. This was probably due to the fact that a large proportion of the farmers in this group operated under leases that provided for the ownership of fewer cattle by the landlord than was provided by the leases in the other groups.

The fact that 17 of the tenant farmers had debt ratios of 40 percent or more indicates the ease with which operators in this area could borrow money to acquire farm assets.

The debts of owners (Table 6) were chiefly long-term debts. There were second mortgages only in the groups having an indebtedness of

TABLE 7.—CAPITAL POSITION OF 79 TENANTS WITH DIFFERENT DEBT-TO-PROPERTY RATIOS, DECEMBER 31, 1941

Debt ratio	0	1-19%	20-39%	40% and over
Number of farms	19	21	22	17
Assets				
Land and improvements	$ 0	$ 0	$ 0	$ 0
Machinery and equipment	2 241	2 023	1 901	1 604
Horses	328	303	345	246
Dairy cattle	2 312	2 230	2 579	2 483
Other livestock	471	285	498	396
Feed and grain	1 805	1 564	1 428	1 130
Insurance, etc.	364	159	107	47
Total current assets[a]	7 521	6 564	6 858	5 906
Other investments	1 023	1 501	726	0
Total assets	$8 544	$8 065	$7 584	$5 906
Liabilities				
First land mortgages	$ 0	$ 0	$ 0	$ 0
Second land mortgages	0	0	0	0
Other long-term debts	263	859	195	0
Total long-term debts	263	859	195	0
Total short-term debts	58	548	1 405	3 053
Total debts	321[b]	1 407	1 600	3 053
Net worth	$8 223	$6 658	$5 984	$2 853
Average debt ratio, percent	4.0	17.0	21.0	52.0
Size—acres owned	0	0	0	0
—acres operated	159	142	164	150
—number of cows milked	27.3	21.4	25.7	23.6

[a]Also total farm assets since these tenants had no other farm assets. [b]Farms with no debts at the beginning of the year were classified in this group.

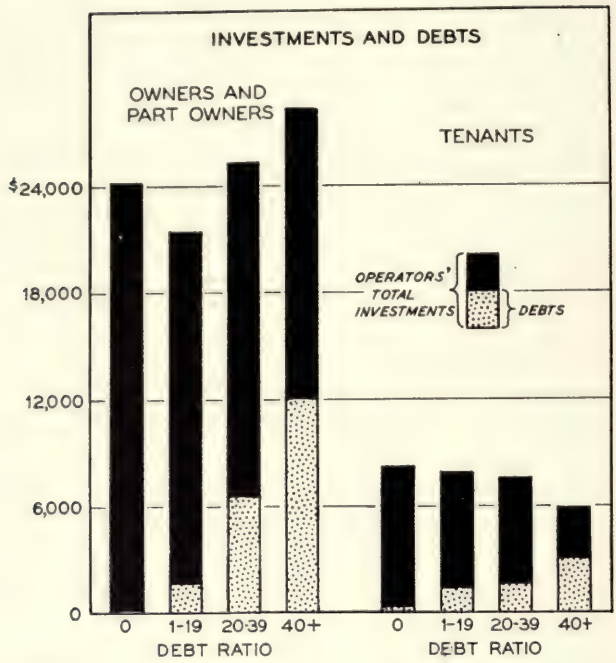


Fig. 2.—Total investments and debts of operators having different debt ratios, December 31, 1941. When the farms of no-debt owners were left out of consideration, the total investments of the remaining owners were positively correlated with debt ratio; that is, the more heavily indebted owner-operators had the larger investments. The reverse was true for tenants, the more heavily indebted tenants having the use of less capital.

20 percent and over. These latter groups had the largest short-term debts. Mortgage debts of the most heavily indebted group of owners represented 60 percent of the value of land and improvements.

Progress during the period. From Table 8 two significant observations can be made concerning the average assets and liabilities of owners and part owners in each debt-ratio group for the three years. (It should be remembered that the farms were not identical from year to year.) The situation in 1941 is shown in Fig. 3.

First, altho all groups increased their assets each year during this period, the increases were largest where the debts were highest. The more heavily indebted owners built up their assets and reduced their debts to a greater extent in each of these three years than did the less heavily indebted owners. The amortization principle, which normally involves payment in proportion to the size of the loan, partly accounts

TABLE 8.—CHANGES IN ASSETS AND LIABILITIES OF OWNERS AND PART OWNERS WITH DIFFERENT DEBT-TO-PROPERTY RATIOS, 1940, 1941, AND 1942

Year	Number of farms	Debt ratio, percent	End of year		Changes during the year		Increase in net worth		
			Assets	Liabilities	Increase in assets excluding cash	Decrease in liabilities	Excluding cash	Including cash	Percent increase (with cash)
No debts									
1940.....	12	0	$24 358	$ 0	$ 447	$ 0	$ 447	$ 762	3.2
1941.....	12	0[a]	24 264	103	1 108	(103[b])	1 005	1 660	7.0
1942.....	9	0	29 583	0	1 663	0	1 663	4 370	15.2
Debt ratios of 1 to 19 percent									
1940.....	11	7	$20 251	$ 1 347	$ 360	$ (61[b])	$ 299	$ 453	2.4
1941.....	9	8	21 571	1 685	926	230	1 156	1 284	6.7
1942.....	15	6	23 056	1 317	1 432	1 028	2 460	2 268	11.1
Debt ratios of 20 to 39 percent									
1940.....	24	30	$24 030	$7 295	$ 602	$ 323	$ 925	$ 880	5.4
1941.....	27	26	25 265	6 502	1 779	554	2 333	2 535	14.4
1942.....	25	23	25 222	5 871	1 438	1 025	2 463	3 206	17.7
Debt ratios of 40 percent and over									
1940.....	12	49	$24 299	$11 800	$ 910	$ 69	$ 979	$1 038	8.6
1941.....	19	42	28 381	12 055	2 051	723	2 774	3 019	20.2
1942.....	12	40	29 096	11 582	1 768	1 226	2 994	4 440	27.7

[a]Less than one-half of 1 percent. [b]These are increases.

for the large payments the most heavily indebted farmers made. But some of these men made payments in addition to those required by the terms of their loans. It is clear that in the owner group debt reduction went hand in hand with increase in assets.

Second, the rate of increase in net worth became larger as debt ratios became higher. This was true in each of the three years. Two reasons for this were: (1) the rate earned by the operators of the more heavily indebted farms exceeded the cost of borrowing and thus increased the rate earned on the owner's net worth; (2) these more heavily indebted farms tended to be larger than the more lightly indebted farms, and in a period of favorable earnings large farms pay better than small farms.

In each group of tenants (Table 9) the assets were increased during each of the three years. The group with the lowest debts and the group with no debts did somewhat better, in general, than the two groups with the highest debts, but the situation was not clear-cut in this respect. Thruout the period these men were all accumulating capital, while changes in their debts varied. Debts tended to increase in the low-debt and no-debt groups and to be reduced in the group with

TABLE 9.—CHANGES IN ASSETS AND LIABILITIES OF TENANTS WITH DIFFERENT DEBT-TO-PROPERTY RATIOS, 1940, 1941, AND 1942

Year	Number of farms	Debt ratio, per-cent	End of year		Changes during the year		Increase in net worth		
			Assets	Liabilities	Increase in assets excluding cash	Decrease in liabilities	Excluding cash	Including cash	Percent increase (with cash)
No debts									
1940	15	0	$7 401	$ 0	$ 916	$ 33	$ 949	$ 774	11.2
1941	19	4	8 544	321	2 182	(321[a])	1 861	2 076	28.5
1942	12	2	9 518	208	1 658	(208[a])	1 450	2 618	30.5
Debt ratios of 1 to 19 percent									
1940	16	9	$7 040	$ 613	$ 833	$ (82[a])	$ 751	$ 694	11.5
1941	21	17	8 065	1 407	1 996	(868[a])	1 128	1 402	23.0
1942	23	11	8 080	890	1 748	(290[a])	1 458	2 015	31.2
Debt ratios of 20 to 39 percent									
1940	20	29	$5 922	$1 705	$ 355	$ (54[a])	$ 301	$ 546	13.4
1941	22	21	7 584	1 600	946	274	1 220	1 887	34.9
1942	13	17	9 635	1 656	1 092	550	1 642	2 478	34.6
Debt ratios of 40 percent and over									
1940	12	65	$4 535	$2 946	$1 134	$(559[a])	$ 575	$ 369	28.3
1941	17	52	5 906	3 053	1 134	(218[a])	916	1 343	56.1
1942	9	41	6 656	2 734	1 668	239	1 907	1 532	51.6

[a]These are increases.

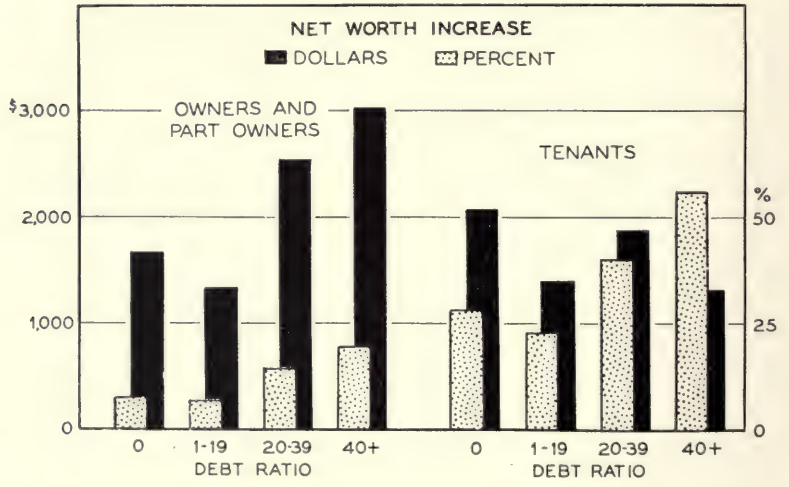


Fig. 3.—Change in net worth of operators with change in debt ratio, 1941. As measured in dollars, the increase in the net worth of owners, but not of tenants, became larger as the debt ratio increased. In both groups, however, the percentage increase became larger as the debt ratio increased, indicating that in this period it paid to use borrowed capital.

debt ratios of 20 percent to 39 percent. In the high-debt group they tended to increase in the first two years and to decline in 1942. The tenants were, in general, using their credit to build up their assets.

The possibilities that existed for farmers with comparatively small capital of their own to build up assets is illustrated by the increase in net worth among the tenants having debt ratios of 40 percent or more. These men increased their net worth, on the average, by amounts ranging from somewhat more than a quarter to somewhat more than a half in each of these three years. As was true with owners, the tenants having the highest debt ratios had the highest percentage increases in net worth; but unlike the owners having high debts, these high-debt tenants were not operating the larger farms.

Operators With Businesses of Different Size

A good measure of the size of a farm business is the number of productive man work units required in its operation in the course of a year.[1] As would be expected, the size of the business correlated directly with the amount of farm capital invested in each key item—land and improvements, machinery and equipment, dairy cattle, and

TABLE 10.—CAPITAL POSITION OF 67 OWNERS AND PART OWNERS HAVING FARM BUSINESSES OF DIFFERENT SIZE, DECEMBER 31, 1941

Size of farm in productive man work units[a]	Under 400	400-549	550-699	700 and over
Number of farms	16	16	20	15
Assets				
Land and improvements	$ 9 800	$13 743	$19 277	$20 300
Machinery and equipment	1 124	2 074	2 705	2 893
Horses	130	308	272	369
Dairy cattle	1 393	2 859	3 209	4 331
Other livestock	233	411	717	785
Feed and grain	806	1 589	2 699	3 365
Insurance, etc.	298	239	280	207
Total current assets	3 984	7 480	9 882	11 949
Total farm assets	13 784	21 223	29 159	32 249
Other investments	1 453	479	1 378	1 413
Total assets	$15 237	$21 702	$30 537	$33 662
Liabilities				
Long-term debts	$ 2 238	$ 4 267	$ 6 622	$ 8 641
Short-term debts	551	687	578	1 566
Total debts	$ 2 789	$ 4 954	$ 7 200	$10 207
Debt ratio, percent	18	23	24	30
Average size of farm				
Number of man work units	310	489	621	830
Number of acres owned	69.8	107.6	161.6	194.6
Number of acres operated	70.6	117.1	178.3	225.2
Number of cows milked	11.7	18.6	23.4	30.7

[a]See definition given below

[1]A productive man work unit is that amount of productive farm work (as distinguished from necessary but unproductive work) that can be performed at average intensity and efficiency in a 10-hour day.

feed and grain (Tables 10 and 11). Among the owners, the larger farms had the higher debt ratios, but among the tenants these two factors were not correlated (see also Fig. 4).

Per man work unit, the tenants had about $10 invested in farm operating capital; the owners had between $13 and $14. The lower value for tenants reflects the effect of the tenants' sharing with the land owners the responsibility for providing capital. The owners of the

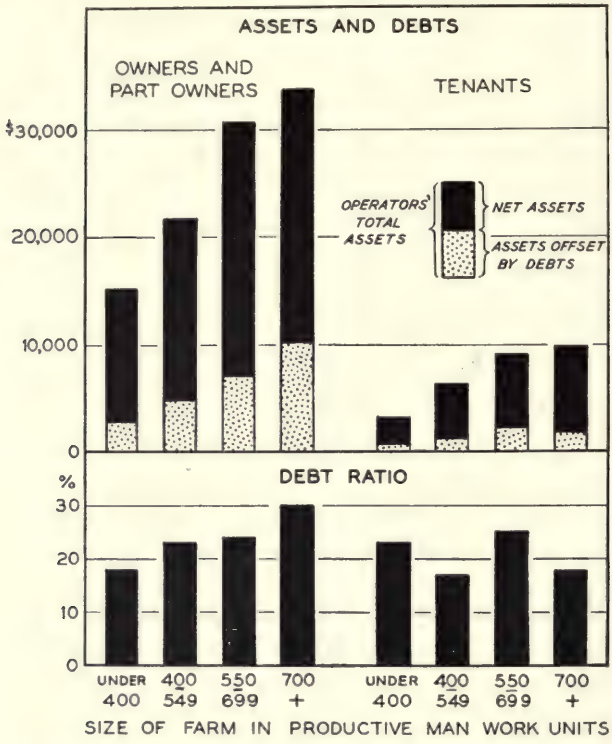


Fig. 4.—Assets, debts, and debt ratios of men operating farms of different size, December 31, 1941. For owners but not for tenants the debt ratio increased with size of farm; it averaged slightly over 20 percent.

15 largest farms had $24 invested in land and improvements per man work unit, whereas the owners of the smallest farms had $32 so invested. This difference is due partly to the fact that there were more part owners among the owners of the largest farms.

Examination of the financial progress of these farmers reveals that

in both the owner and the tenant groups size of business was positively correlated with the extent of the increases in net worth (Tables 12

TABLE 11.—CAPITAL POSITION OF 79 TENANTS WITH FARM BUSINESSES OF DIFFERENT SIZE, DECEMBER 31, 1941

Size of farm in productive man work units	Under 400	400-549	550-699	700 and over
Number of farms	13	24	21	21
Assets				
Land and improvements	$ 0	$ 0	$ 0	$ 0
Machinery and equipment	703	1 604	1 966	3 105
Horses	189	345	308	369
Dairy cattle	1 192	2 120	2 906	2 966
Other livestock	329	499	366	365
Feed and grain	717	1 190	1 717	2 088
Insurance, etc.	48	141	263	186
Total current assets[a]	3 178	5 899	7 526	9 079
Other investments	44	526	1 550	867
Total assets	$3 222	$6 425	$9 076	$9 946
Liabilities				
Long-term debts	$ 0	$ 209	$ 776	$ 288
Short-term debts	751	888	1 512	1 550
Total debts	$ 751	$1 097	$2 288	$1 838
Debt ratio, percent	23	17	25	18
Average size of farm				
Number of man work units	306	487	610	927
Number of acres owned	0	0	0	0
Number of acres operated	90.1	133.2	151.6	218.3
Number of cows milked	12.0	19.7	24.8	35.9

[a]Also the total farm assets since these tenants had no other farm assets.

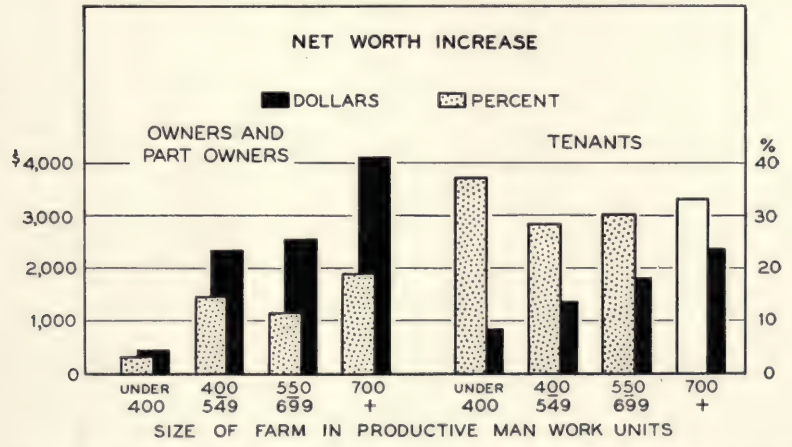


Fig. 5.—Amount and percentage of increase in net worth of operators in 1941. The dollar increases were positively correlated with size of farm in each group of operators, tho the increases in the tenant groups were less than in the owner groups. The percentage increases were much greater in the tenant groups than in the owner groups, but in the tenant groups the rate of increase tended to decline with size of farm rather than to increase, as in the owner groups.

TABLE 12.—CHANGES IN ASSETS AND LIABILITIES OF OWNERS AND PART OWNERS OPERATING FARM BUSINESSES OF DIFFERENT SIZE, 1940, 1941, AND 1942

Year	Number of farms	Debt ratio, percent	End of year		Changes during the year		Increase in net worth		
			Assets	Liabilities	Increase in assets excluding cash	Decrease in liabilities	Excluding cash	Including cash	Percent increase (with cash)
Less than 400 productive man work units									
1940	17	20	$16 215	$3 177	$ 314	$ 24	$ 338	$ 462	3.6
1941	16	18	15 237	2 789	285	261	546	442	3.6
1942	11	17	15 329	2 583	607	265	872	868	7.1
400 to 549 productive man work units									
1940	15	21	$21 397	$4 510	$ 640	$ (98[a])	$ 542	$ 684	4.1
1941	16	23	21 702	4 954	1 517	591	2 108	2 333	14.9
1942	13	17	24 170	4 029	1 585	841	2 426	2 919	15.4
550 to 699 productive man work units									
1940	18	24	$28 238	$6 702	$ 618	$ 196	$ 814	$ 769	3.6
1941	20	24	30 537	7 200	1 733	362	2 095	2 558	11.5
1942	20	19	27 678	5 168	1 529	1 092	2 621	3 136	14.8
700 productive man work units and over									
1940	9	32	$30 937	$ 9 912	$ 958	$ 605	$1 563	$1 745	8.6
1941	15	30	33 662	10 207	3 009	580	3 589	4 116	19.0
1942	17	22	32 668	7 139	2 103	1 181	3 284	5 681	23.8

[a]This is an increase.

TABLE 13.—CHANGES IN ASSETS AND LIABILITIES OF TENANTS OPERATING FARM BUSINESSES OF DIFFERENT SIZE, 1940, 1941, AND 1942

Year	Number of farms	Debt ratio, percent	End of year		Changes during the year		Increase in net worth		
			Assets	Liabilities	Increase in assets excluding cash	Decrease in liabilities	Excluding cash	Including cash	Percent increase (with cash)
Less than 400 productive man work units									
1940	10	29	$2 744	$ 786	$ 535	$(363[a])	$ 172	$ 124	6.6
1941	13	23	3 222	751	527	(240[a])	287	869	37.3
1942	7	5	4 491	234	751	204	955	1 080	28.6
400 to 549 productive man work units									
1940	17	19	$5 348	$ 991	$ 545	$ (79[a])	$ 466	$570	13.8
1941	24	17	6 425	1 097	1 055	(46[a])	1 009	1 382	28.6
1942	20	18	7 250	1 321	1 879	(331[a])	1 548	1 756	34.1
550 to 699 productive man work units									
1940	17	24	$7 564	$1 817	$ 582	$(141[a])	$ 438	$ 642	11.6
1941	21	25	9 076	2 288	2 011	(538[a])	1 473	1 825	30.2
1942	16	16	9 884	1 584	1 502	(187[a])	1 315	2 377	31.1
700 productive man work units and over									
1940	19	16	$7 872	$1 244	$1 223	$ (61[a])	$1 162	$ 851	14.1
1941	21	18	9 946	1 838	2 316	(308[a])	2 008	2 375	33.4
1942	14	10	10 761	1 122	1 603	594	2 197	3 075	36.0

[a]These are increases.

and 13). In the period covered, such correlation was to be expected, for production was profitable and the larger the business the higher was the net income. Among the owners, the percentage increase in net worth also tended to increase with the size of the business, but among the tenants it did not increase so uniformly. Moreover, during this period, with the exception of 1942, the rate of increase tended to rise from year to year. The situation in 1941 is shown in Fig. 5.

All groups of owners reduced their debts in all three years except in 1940, when one group increased their debts. This confirms the observation on this point made on page 529. All groups of tenants increased their debts in all three years except in 1942, when two groups reduced their debts. These increases by tenants reflected their efforts to build up working capital. Thru these three years this policy proved to be wise. The question is: Will these men be able to foresee when the trend of income will be reversed and liquidate their indebtedness before their incomes begin to decline? As a group their debts were not large; in none of the subgroups did the average debt ratio exceed 20 percent of the assets at the end of 1942.

Operators With Continuous Records

Records were obtained concerning the businesses of 72 operators for 1940, 1941, and 1942. Changes in the financial position of these men are shown in Tables 14 and 15 and in Figs. 6, 7, and 8.

There was a moderate increase in the value of machinery and equipment, the increases between December 31, 1939, and December 31, 1942, being $391 for the owners, $733 for the part owners, $534 for the cash tenants, and $557 for the livestock-share tenants. The value of this class of property increased each year, even in 1942, when the output of farm machinery was restricted.

The most marked increase was in the value of dairy cattle. Between the beginning and the end of the period owners showed an increase of $1,783 in this class of livestock; part owners, $2,113; and cash tenants, $1,708. The increase in the value of other livestock was also marked, particularly on the part-owner and cash-tenant farms. Feed and grain inventories also increased substantially.

The increase in the value of the assets on these farms was marked, considering conditions in the period covered. As pointed out before, the debts of owners and part owners were being reduced during this period, while until 1942 those of the tenants were increasing. The average debt ratio of owners declined from 23.1 percent on December 31, 1939, to 14.7 percent on December 31, 1942; the average debt ratio

TABLE 14.—COMPARATIVE BALANCE SHEETS AND DEBT-TO-PROPERTY RATIOS OF IDENTICAL OWNERS AND PART OWNERS, DECEMBER 31, 1939, 1940, 1941, AND 1942

	Owners				Part owners			
	1939	1940	1941	1942	1939	1940	1941	1942
Number of farms	25				11			
Assets								
Land and improvements	$15 787	$15 750	$15 849	$16 102	$15 465	$15 443	$15 660	$14 296
Machinery and equipment	1 589	1 752	1 952	1 980	1 772	2 029	2 283	2 505
Horses	276	309	300	316	349	358	329	389
Dairy cattle	2 250	2 376	3 127	4 033	2 513	2 701	3 524	4 626
Other livestock	251	228	396	435	297	321	577	827
Feed and grain	1 415	1 603	2 036	2 368	1 511	1 855	2 381	2 479
Insurance, etc.	378	413	438	410	91	91	91	91
Total current assets	6 159	6 681	8 249	9 542	6 533	7 355	9 185	10 917
Total farm assets	21 946	22 431	24 098	25 644	21 998	22 798	24 845	25 213
Other investments	733	712	663	642	191	191	191	1 464
Total assets	$22 679	$23 143	$24 761	$26 286	$22 189	$22 989	$25 036	$26 677
Liabilities								
Total long-term debts	$ 4 687	$ 4 417	$ 3 974	$ 3 420	$ 7 140	$ 6 951	$ 6 722	$ 5 540
Total short-term debts	541	617	577	456	1 640	1 722	1 404	989
Total liabilities	$ 5 228	$ 5 034	$ 4 551	$ 3 876	$ 8 780	$ 8 673	$ 8 126	$ 6 529
Net worth	17 451	18 109	20 210	22 410	13 409	14 316	16 910	20 148
Net worth and liabilities	$22 679	$23 143	$24 761	$26 286	$22 189	$22 989	$25 036	$26 677
Changes.								
Increase in assets	$464	$1 618	$1 525		$800	$2 047	$1 641	
Decrease in liabilities	194	483	675		107	547	1 597	
Increase in net worth								
Excluding cash	658	2 101	2 200		907	2 594	3 238	
Including cash	538	2 550	3 430		884	2 985	4 477	
Percent increase	3.0	13.3	16.1		6.4	19.1	24.2	
Debt ratio, percent								
Total debts to total assets	23.1	21.8	18.4	14.7	39.6	37.7	32.5	24.5
Short-term debts to current assets	8.8	9.2	7.0	4.8	25.1	23.4	15.3	9.1
Long-term debts to land and improvements	29.7	28.0	25.1	21.2	46.2	45.0	42.9	38.8
Size								
Productive man work units	...	534	565		...	629	657	
Acres—owned	127	127	130		120	120	120	
—total operated	131	127	133		169	179	189	
Number of cows milked	19.5	20.5	22.2		22.2	23.9	23.8	
Months of labor—total	23.9	25.0	24.0		24.6	28.4	23.8	
—hired	5.0	6.9	6.1		4.7	7.0	6.5	

TABLE 15.—COMPARATIVE BALANCE SHEETS AND DEBT-TO-PROPERTY RATIOS OF IDENTICAL TENANTS, DECEMBER 31, 1939, 1940, 1941, AND 1942

	Cash tenants				Livestock-share tenants			
	1939	1940	1941	1942	1939	1940	1941	1942
Number of farms	23				13			
Assets								
Land and improvements	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0
Machinery and equipment	1 410	1 523	1 823	1 944	1 938	2 005	2 313	2 495
Horses	292	300	280	282	370	399	385	464
Dairy cattle	1 800	1 996	2 751	3 508	849	1 127	1 547	2 187
Other livestock	259	304	428	724	197	211	397	461
Feed and grain	1 203	1 383	1 743	1 809	882	1 080	1 447	1 480
Insurance, etc.	241	248	272	280	251	275	308	329
Total current assets	5 205	5 754	7 297	8 547	4 487	5 097	6 397	7 416
Total farm assets	5 205	5 754	7 297	8 547	4 487	5 097	6 397	7 416
Other investments	1 205	1 247	1 428	1 994	108	110	121	448
Total assets	$6 410	$7 001	$8 725	$10 541	$4 595	$5 207	$6 518	$7 864
Liabilities								
Total long-term debts	$ 196	$ 191	$ 187	$ 234	$ 0	$ 0	$ 0	$ 0
Total short-term debts	646	829	907	823	1 068	1 222	1 115	1 002
Total liabilities	$ 842	$1 020	$1 094	$1 057	$1 068	$1 222	$1 115	$1 002
Net worth	5 568	5 981	7 631	9 484	3 527	3 985	5 403	6 862
Net worth and liabilities	$6 410	$7 001	$8 725	$10 541	$4 595	$5 207	$6 518	$7 864
Changes								
Increase in assets	$591	$1 724	$1 816		$612	$1 311	$1 346	
Decrease in liabilities	178[a]	74[a]	37		154[a]	107	113	
Increase in net worth								
Excluding cash	413	1 650	1 853		458	1 418	1 459	
Including cash	372	1 931	2 512		294	1 626	1 976	
Percent increase	6.4	28.4	29.4		7.8	34.6	32.2	
Debt ratio, percent								
Total debts to total assets	13.1	14.6	12.5	10.0	23.2	23.5	17.6	12.7
Short-term debts to current assets	12.4	14.4	12.4	9.6	23.8	24.0	17.4	13.5
Long-term debts to land and improvements	....	....	....	....	....	....	....	....
Size								
Productive man work units	...	541	551		...	792	788	
Acres, total	134	134	143		182	182	180	
Number of cows milked	20.4	21.1	21.7		30.3	31.7	32.3	
Months of labor—total	22.3	23.0	23.0		24.0	26.6	25.7	
—hired	5.9	5.8	4.8		6.5	6.1	5.3	

[a]These are increases.

of part owners declined from 39.6 percent to 24.5 percent. This latter group reduced their short-term debts from an average of $1,640 to an average of $989. The average debt ratio of the cash tenants declined from 13.1 percent to 10.0 percent, a decline reflecting a larger increase in assets than in debts; and the average debt-ratio of the livestock-share tenants declined from 23.2 percent to 12.7 percent.

Between the above dates the farms operated by owners increased by an average of 2 acres; those operated by part owners, 20 acres, and by cash tenants, 9 acres; while livestock-share tenants reduced their farms an average of 2 acres. All groups increased the number of cows milked; the greatest change was made by owners, who averaged an increase of 2.7 cows each. The number of months of labor used on these farms changed but little over this three-year period.

The increase in value of livestock and of feed and grain in this

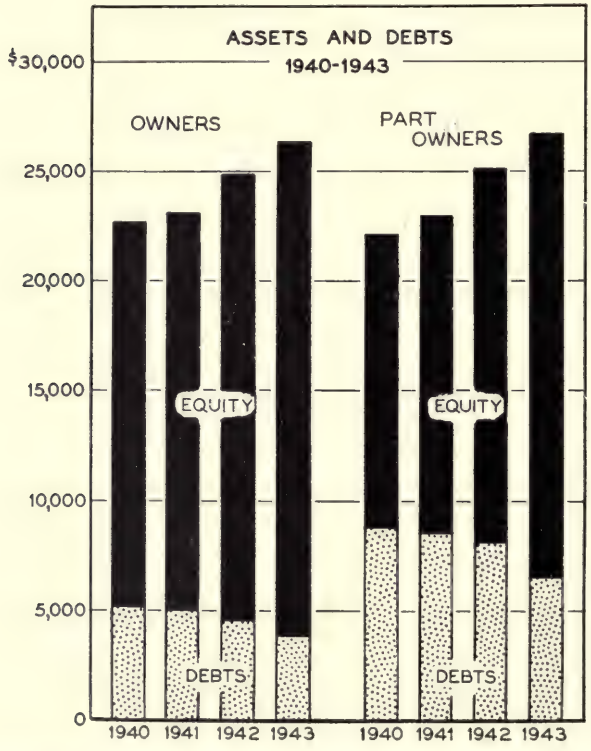


Fig. 6.—Capital and debt positions of owners and part owners on identical farms, 1940-1943. The amounts of capital used by these operators increased, whereas their debts were reduced, particularly in 1943.

period reflected, in large part, the rise in prices. When individual farmers buy and sell livestock frequently, as they do in this area, there is no practical way to inventory it except at current values. Changes in numbers of animal units are of interest, therefore, and are shown in Table 16.

On the whole, except on the larger farms in 1942, the number of dairy cattle on these farms tended to increase. Over the three-year period, the owners of the larger farms increased their herds more than the owners of the smaller farms. The reverse was true for the tenants, those on the small farms increasing their herds more than those on the larger farms.

No marked increase occurred in the numbers of hogs inventoried. The group of owners having the largest farms and the two groups of tenants on the larger farms had fewer hogs at the end of the period

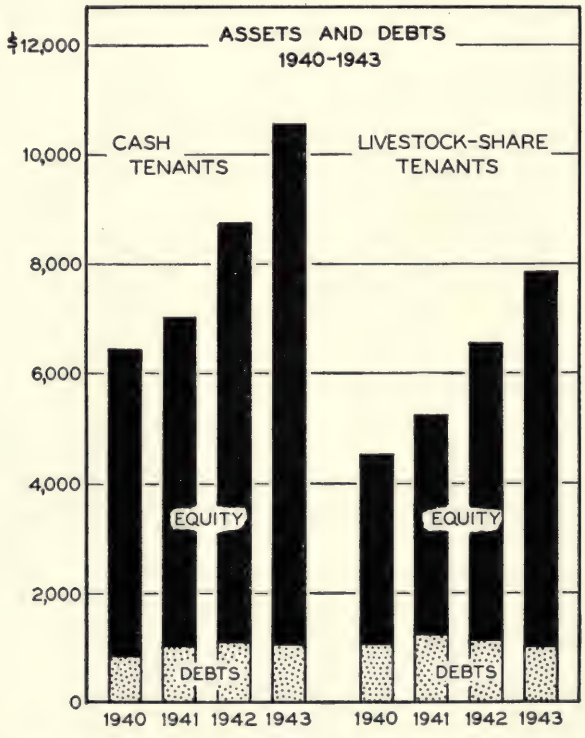


Fig. 7.—Capital and debt positions of tenants on identical farms, 1940-1943. The amounts of capital used by these farmers increased sharply during this period, while debts remained about constant.

TABLE 16.—CHANGES IN ANIMAL UNITS ON 72 IDENTICAL FARMS DURING 1940, 1941, AND 1942

Tenure, and size in terms of productive man work units	Number of farms	Animal units on hand on December 31				Over-all change
		1939	1940	1941	1942	
Dairy cattle						
Owners and part owners						
Less than 400	7	15.2	15.9	15.1	16.7	+1.5
400-549	11	21.8	23.2	24.9	25.4	+3.6
550-699	11	27.4	27.7	29.5	30.6	+3.2
700 and over	7	36.8	39.0	41.4	41.0	+4.2
Tenants						
Less than 400	6	10.6	14.5	14.6	16.3	+5.7
400-549	7	18.4	21.4	23.9	24.0	+5.6
550-699	13	26.4	27.2	29.2	28.6	+2.2
700 and over	10	45.8	49.1	49.8	49.8	+4.0
Hogs						
Owners and part owners						
Less than 400	7	.13	.38	.20	.16	+.03
400-549	11	.36	.56	1.00	.73	+.37
550-699	11	1.26	.95	1.50	1.40	+.14
700 and over	7	1.95	1.55	1.73	1.22	−.73
Tenants						
Less than 400	6	.05	.54	.92	1.06	+1.01
400-549	7	.21	.35	.20	.40	+.19
550-699	13	1.74	1.71	1.63	1.26	−.48
700 and over	10	2.12	2.13	2.46	1.96	−.16
Poultry						
Owners and part owners						
Less than 400	7	1.5	1.2	1.1	1.5	0
400-549	11	1.1	1.2	1.4	1.2	+.1
550-699	11	1.4	1.2	1.3	1.6	+.2
700 and over	7	1.2	1.4	1.7	1.5	+.3
Tenants						
Less than 400	6	1.3	1.2	1.1	1.2	−.1
400-549	7	1.5	1.5	1.6	1.4	−.1
550-699	13	1.0	.9	1.0	.8	−.2
700 and over	10	1.4	1.5	1.3	1.3	−.1

than at the beginning. There is no evidence to indicate that hogs were increasing at the expense of dairy cattle in this intensive dairy area in this period. The tendency for the operators of the larger farms to curtail the number of hogs at the end of 1942 probably reflected labor shortages. When labor is scarce, farmers concentrate on the things which they consider most important.

Likewise, numbers of poultry were increased but little. The owners in the three groups of larger farms increased their flocks, but all the tenant groups reduced theirs. It may be that with better incomes from milk there was less necessity for these tenants to keep poultry in order to realize a little extra income.

Beef cattle and sheep were of negligible importance on these farms.

These comparisons indicate that in expanding production in response to increased demands, farmers in this area put the major em-

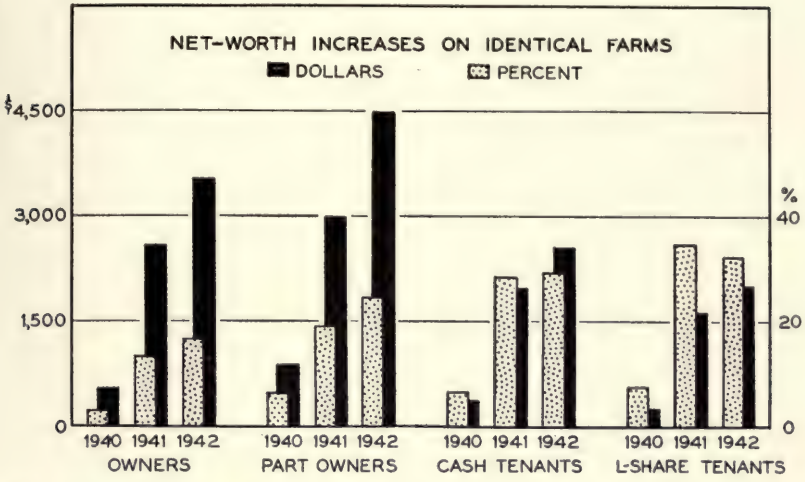


Fig. 8.—Increases in net worth of all operators on identical farms, 1940-1942. In 1940 the increases were small, but in 1941 and 1942 they were rather substantial. Altho dollar increases were larger for owners and part owners than for tenants, the percentage increases were larger for the two tenant groups.

phasis on their primary product—milk. Labor difficulties will doubtless accentuate this trend for the rest of the war period.

CASH INCOME AND EXPENSE PATTERNS

In the capital patterns discussed in the foregoing section, increases in assets included whatever increases resulted from the retention of farm-raised property as well as from cash transactions. The following analysis deals with cash income and expense only.

Patterns of Owners and Tenants Contrasted

The receipts and expense patterns of the various tenure groups are shown in Tables 17 to 19 for three years. Cash receipts include all cash taken in, including that for off-the-farm work and amounts borrowed during the year and not repaid. Expenses include expenditures for operating, for new farm capital, for cash living, and for interest payments. The net paid on old debts (those owed at the start of the year) is shown separately in these tables and is further pictured in Fig. 9. Gross borrowings and debt repayments are shown in Fig. 10.

TABLE 17.—INCOME, EXPENSES, BORROWINGS, AND DEBT REPAYMENTS OF OWNERS AND PART OWNERS, 1940, 1941, AND 1942

	Owners						Part owners					
	1940		1941		1942		1940		1941		1942	
Number of farms	45		51		43		14		16		18	
		perct.		*perct.*		*perct.*		*perct.*		*perct.*		*perct.*
Operator's cash income												
Crop sales	$ 107	2.7	$ 158	2.9	$ 231	3.7	$ 133	2.6	$ 438	6.6	$ 484	5.3
Livestock sales	788	19.9	1 018	18.5	1 470	23.2	1 070	21.2	1 200	18.0	2 159	23.6
Dairy product sales	2 224	56.0	3 003	54.4	3 671	57.9	2 063	41.0	3 470	52.1	4 030	44.0
Other income[a]	577	14.5	955	17.3	731	11.5	1 381	27.4	990	14.9	2 263	24.7
Current unpaid borrowings	273	6.9	379	6.9	236	3.7	391	7.8	558	8.4	216	2.4
Total cash income	$3 969	100	$5 513	100	$6 339	100	$5 038	100	$6 656	100	$9 152	100
Operator's cash expenses												
Livestock purchases	$ 254	7.3	$ 435	10.0	$ 534	11.8	$ 398	9.1	$ 552	10.2	$ 653	10.1
Capital purchases	637	18.2	807	18.5	547	12.1	726	16.6	1 049	19.3	1 424	22.1
Current farm operation	1 671	47.9	1 915	43.8	2 208	49.0	2 010	45.9	2 171	40.0	3 042	47.2
Interest	222	6.4	247	5.6	207	4.6	323	7.4	382	7.0	267	4.1
Family living	707	20.2	966	22.1	1 015	22.5	919	21.0	1 277	23.5	1 066	16.5
Total cash expenses	$3 491	100	$4 370	100	$4 511	100	$4 376	100	$5 431	100	$6 452	100
Net cash income	478	....	1 143	....	1 828	....	662	....	1 225	....	2 700	....
Borrowings and debt repayments												
Net paid on old debts[b]	$ 435	....	$ 860	....	$1 013	....	$ 434	....	$ 932	....	$1 457	....
Percent paid on old debts	8.6	....	13.9	....	18.5	....	5.5	....	10.9	....	20.8	....
Gross borrowings	$ 312	....	$ 505	....	$ 266	....	$ 494	....	$ 795	....	$ 334	....
Gross repayments	474	....	986	....	1 043	....	537	....	1 169	....	1 575	....
Current borrowings unpaid at end of year	273	....	379	....	236	....	391	....	558	....	216	....

[a]Miscellaneous farm income and off-farm income. [b]Debts outstanding at beginning of the year.

TABLE 18.—INCOME, EXPENSES, BORROWINGS, AND DEBT REPAYMENTS OF TENANTS, 1940, 1941, AND 1942

	Cash tenants						Livestock-share tenants					
	1940		1941		1942		1940		1941		1942	
Number of farms	40		50		37		23		29		20	
		perct.		perct.		perct.		perct.		perct.		perct.
Operator's cash income												
Crop sales	$ 252	6.1	$ 237	3.9	$ 202	3.0	$ 31	1.1	$ 75	2.0	$ 145	3.0
Livestock sales	656	15.8	1 028	16.8	1 258	18.7	361	13.2	515	13.8	1 061	22.0
Dairy product sales	2 230	53.9	3 035	49.6	3 832	56.9	1 654	60.4	2 182	58.6	2 790	57.9
Other income[a]	613	14.8	768	12.6	575	8.5	317	11.6	575	15.4	483	10.0
Current unpaid borrowings	388	9.4	1 047	17.1	866	12.9	376	13.7	378	10.2	343	7.1
Total cash income	$4 139	100	$6 115	100	$6 733	100	$2 739	100	$3 725	100	$4 822	100
Operator's cash expenses												
Livestock purchases	$ 429	11.3	$ 586	11.6	$ 831	15.8	$ 289	10.7	$ 217	7.3	$ 305	7.9
Capital purchases	603	15.9	1 368	26.9	973	18.4	403	14.8	642	21.4	689	17.9
Current farm operations	2 000	52.8	2 189	43.1	2 476	46.9	1 256	46.2	1 226	40.9	1 695	44.0
Interest	51	1.3	67	1.3	63	1.2	63	2.3	47	1.6	39	1.0
Family living	708	18.7	870	17.1	934	17.7	706	26.0	864	28.8	1 122	29.2
Total cash expenses	$3 791	100	$5 080	100	$5 277	100	$2 717	100	$2 996	100	$3 850	100
Net cash income	348	....	1 035	....	1 456	....	22	....	729	....	972	....
Borrowings and debt repayments												
Net paid on old debts[b]	$ 238	....	$ 556	....	$ 740	....	$ 264	....	$ 465	....	$ 586	....
Percent paid on old debts	22.2	....	42.1	....	59.7	....	21.9	....	38.9	....	50.1	....
Gross borrowings	$ 493	....	$1 286	....	$1 060	....	$ 496	....	$ 477	....	$ 489	....
Gross repayments	343	....	795	....	934	....	384	....	564	....	732	....
Current borrowings unpaid at end of year	388	....	1 047	....	866	....	376	....	378	....	343	....

[a]Miscellaneous farm income and off-farm income. [b]Debts outstanding at beginning of the year.

TABLE 19.—INCOME, EXPENSES, BORROWINGS, AND DEBT REPAYMENTS OF TENANTS OPERATING UNDER LIVESTOCK-SHARE LEASES, 1940, 1941, AND 1942

	Livestock-share tenants owning half of cows						Livestock-share tenants owning less than half of cows					
	1940		1941		1942		1940		1941		1942	
Number of farms	14		21		13		9		8		7	
		perct.		*perct.*		*perct.*		*perct.*		*perct.*		*perct.*
Operator's cash income												
Crop sales	$ 48	1.7	$ 61	1.6	$ 125	2.9	$ 3	.1	$ 111	2.9	$ 182	3.2
Livestock sales	427	15.1	551	15.0	1 009	23.1	258	10.0	421	10.9	1 156	20.4
Dairy product sales	1 498	52.8	2 008	54.6	2 459	56.2	1 900	73.2	2 638	68.5	3 404	60.2
Other income[a]	274	9.7	566	15.4	493	11.3	383	14.8	600	15.6	466	8.2
Current unpaid borrowings	586	20.7	492	13.4	285	6.5	50	1.9	80	2.1	451	8.0
Total cash income	$2 833	100	$3 678	100	$4 371	100	$2 594	100	$3 850	100	$5 659	100
Operator's cash expenses												
Livestock purchases	$ 421	14.8	$ 244	8.7	$ 357	10.6	$ 83	3.3	$ 147	4.2	$ 209	4.4
Capital purchases	455	16.0	561	20.0	458	13.6	324	12.9	854	24.3	1 119	23.5
Current farm operations	1 211	42.5	1 097	39.2	1 399	41.6	1 328	52.8	1 565	44.6	2 242	47.2
Interest	95	3.3	59	2.1	56	1.7	11	.4	16	.4	8	.2
Family living	665	23.4	839	30.0	1 094	32.5	769	30.6	930	26.5	1 173	24.7
Total cash expenses	$2 847	100	$2 800	100	$3 364	100	$2 515	100	$3 512	100	$4 751	100
Net cash income	−14	....	878	....	1 007	....	79	....	338	....	908	....
Borrowings and debt repayments												
Net paid on old debts[b]	$ 342	....	$ 609	....	$ 747	....	$ 145	....	$ 88	....	$ 287	....
Percent paid on old debts	20.4	....	40.7	....	46.5	....	30.6	....	22.2	....	80.8	....
Gross borrowings	$ 773	....	$ 627	....	$ 509	....	$ 63	....	$ 84	....	$ 451	....
Gross repayments	529	....	744	....	974	....	158	....	92	....	287	....
Current borrowings unpaid at end of year	586	....	492	....	282	....	50	....	80	....	451	....

[a]Miscellaneous farm income and off-farm income. [b]Debts outstanding at beginning of the year.

Thruout the period and in each group the largest sources of cash income were the sales of dairy products and livestock, chiefly dairy cattle. For the various tenure groups these items represented from two-thirds to four-fifths of the cash income. Crop sales were not important. "Other income," which included AAA payments, poultry and egg sales, off-the-farm work, etc., was quite an important item, particularly on the owner and part-owner farms, averaging in the three years 14 percent of the total cash income for the owner group, 22 percent for the part-owner group, 12 percent for the cash tenants, and 12 percent for the livestock-share tenants.

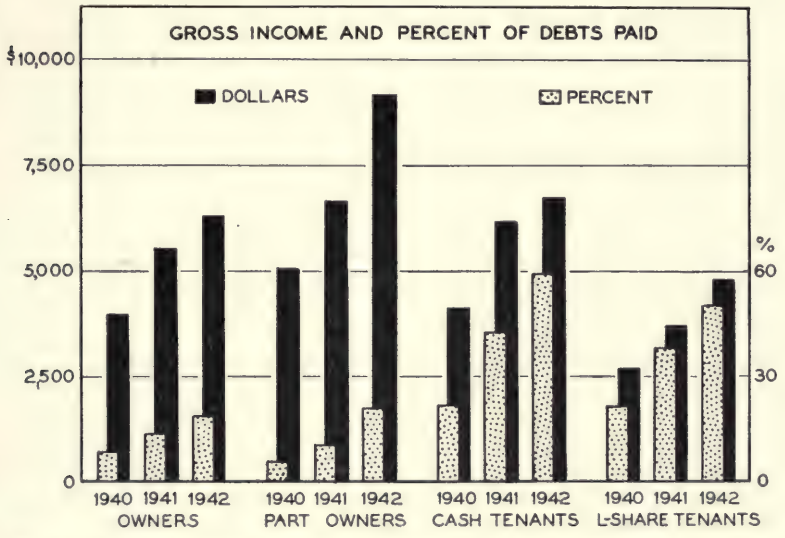


Fig. 9.—Total income and percentage of old debts repaid in 1940, 1941, and 1942. In each group—owners, part owners, cash tenants and livestock-share tenants—both total income and percentage of old debts repaid increased each year.

From the standpoint of financing the business, the percentage of cash resulting from net borrowing is important. It indicates the extent to which operators depend on current borrowings for working capital. (The unpaid balance of such borrowings does not indicate fully the importance of borrowing in providing operating capital because it does not include repayments made during the year.) For owners the net-borrowing figure was low, ranging from 3.7 to 6.9 percent of current receipts in the various years; for part owners also it was low, ranging from 2.4 to 8.4 percent. For cash tenants it ranged from 9.4 to 17.1

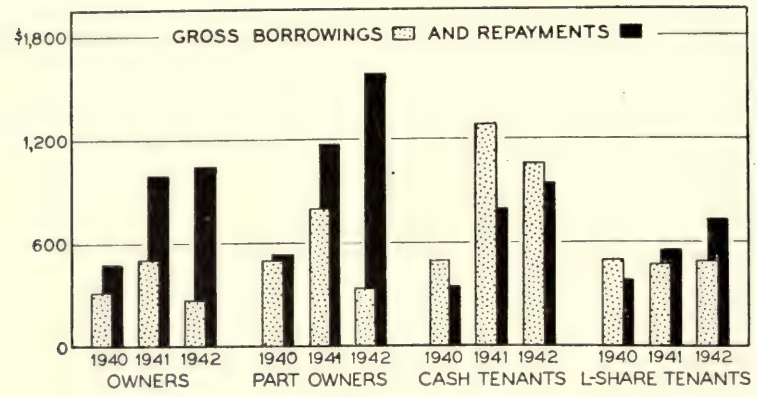


Fig. 10.—Gross borrowings and debt repayments in 1940, 1941, and 1942. All groups increased their debt repayments each year. Except for livestock-share tenants, whose borrowings were quite uniform from year to year, borrowings in 1941 were larger than in 1940 and smaller than in 1942. Owners reduced their debts during these three years. Cash tenants increased theirs in 1940 and 1941 but reduced them slightly in 1942.

percent; and for livestock-share tenants, from 7.1 to 13.7 percent. These borrowings declined in importance during the period.

Current operating cost was the most important item of expense, making up from two-fifths to one-half of the total in the different groups. Next in importance were family living expenses, which in the several groups varied from one-sixth to one-third of the total cash expenses. Next in amount were capital purchases other than livestock, purchases which made up one-eighth to one-fourth of the total cash expense.

The amounts spent for livestock varied from about 3 percent of the 1940 cash expense of livestock-share tenants owning less than 50 percent of the cows to 16 percent of the 1942 cash expense of cash tenants. Payment of interest was the least important item, varying from 4 to 7 percent for owners and part owners, and from .2 to 3.3 percent among the various groups of tenants.

Changes in cash position. Receipts increased more than expenses in this period. The 1942 cash receipts and expenses exceeded the 1940 receipts and expenses as shown at the top of page 553.

How were these increased cash balances used? In these calculations any income used in building up physical inventories was included in expenses. The three obvious uses for the remainder were: (1) the payment of old debts, (2) the building up of cash resources, and

	Cash receipts, 1942 over 1940	*Cash expense, 1942 over 1940*	*Increase in net cash receipts, 1942 over 1940*
Owners	$2 370	$1 020	$1 350
Part owners	4 114	2 076	2 038
Cash tenants	2 594	1 486	1 108
Livestock-share tenants			
Owning half of cows	1 538	517	1 021
Owning less than half of cows	3 065	2 236	829

(3) the making of outside investments. It was difficult to obtain data from farmers as to changes in their cash positions. Therefore, such changes were not included in the data collected. Likewise, in 1942 it was difficult to obtain data regarding purchases of Government bonds on a sufficiently uniform basis to warrant inclusion of such purchases in the averages.

These farmers, however, appear to have considerably increased their holdings of cash and of bonds, especially in 1942. After net payments on debts owed at the beginning of the year were deducted, the following cash balances were not accounted for. Part of these balances may reflect errors in the basic data, but it is believed that they chiefly represent changes in cash position:

	1940	*1941*	*1942*
Owners	$ 43	$283	$ 815
Part owners	228	293	1 243
Cash tenants	110	479	716
Livestock-share tenants	−242	264	386
Owning half of cows	−356	269	260
Owning less than half of cows	−66	250	621

These data suggest that cash balances increased but little in 1940, increased moderately in 1941, and increased substantially in all groups in 1942. By the end of 1942 holdings of cash or Government bonds were beginning to be rapidly built up. Apparently these farmers were beginning to accumulate cash reserves for investment or for future periods when incomes might not be very favorable.

Operators With Different Debt Ratios

The income and expense patterns did not vary significantly for the groups with different debt-to-property ratios (Tables 20 and 21). In all but two of these eight groups, 1942 increases in cash or in bond purchases were substantial.

Among the owners, the differences between cash receipts and expenses tended to be positively correlated with debt ratios (Table 22). As has been pointed out above, the larger farms had the higher debt

TABLE 20.—INCOME, EXPENSES, BORROWINGS, AND DEBT REPAYMENTS OF OWNERS AND PART OWNERS WITH DIFFERENT DEBT RATIOS, 1942

Debt ratio	0		1-19%		20-39%		40% and over	
Number of farms	9		15		25		12	
		perct.		*perct.*		*perct.*		*perct.*
Operator's cash income								
Crop sales	$ 478	6.3	$ 200	3.7	$ 196	2.8	$ 539	5.8
Livestock sales	2 357	31.2	746	13.9	1 968	27.8	1 706	18.3
Dairy product sales	4 149	54.9	3 328	62.1	3 848	54.3	3 910	42.0
Other income	579	7.6	1 019	19.0	732	10.3	2 777	29.8
Current unpaid borrowings	0	...	68	1.3	338	4.8	379	4.1
Total cash income	$7 563	100	$5 361	100	$7 082	100	$9 311	100
Operator's cash expenses								
Livestock purchases	$ 314	6.5	$ 462	10.4	$ 684	13.8	$ 652	10.4
Capital purchases	932	19.2	858	19.2	509	10.2	1 264	20.2
Current farm operations	2 614	53.8	2 077	46.6	2 515	50.5	2 681	42.8
Interest	0	...	92	2.1	271	5.5	462	7.4
Family living	996	20.5	968	21.7	997	20.0	1 200	19.2
Total cash expenses	$4 856	100	$4 457	100	$4 976	100	$6 259	100
Net cash income	2 707	...	904	...	2 106	...	3 052	...
Borrowings and debt repayments								
Net paid on old debts	$ 0	...	$1 096	...	$1 363	...	$1 606	...
Cash not accounted for	2 707	...	−192	...	743	...	1 446	...
Percent paid on old debts	0	...	46.7	...	19.8	...	12.5	...
Gross borrowings	0	...	$ 68	...	$ 407	...	$ 520	...
Gross repayments	0	...	1 096	...	1 432	...	1 747	...
Current borrowings unpaid at end of year	0	...	68	...	338	...	379	...

ratios. Net cash incomes and amounts of cash unaccounted for increased in all groups from year to year. Among tenants there was no definite tendency for size of cash balance to be correlated with debt ratio, but these balances tended to increase from year to year (Table 23).

TABLE 21.—INCOME, EXPENSES, BORROWINGS, AND DEBT REPAYMENTS OF TENANTS WITH DIFFERENT DEBT RATIOS, 1942

Debt ratio	0		1-19%		20-39%		40% and over	
Number of farms	12		23		13		9	
		perct.		*perct.*		*perct.*		*perct.*
Operator's cash income								
Crop sales	$ 185	3.0	$ 242	4.1	$ 179	2.5	$ 30	.6
Livestock sales	1 173	19.2	1 155	19.5	1 417	20.0	964	19.7
Dairy product sales	3 951	64.7	3 215	54.2	4 127	58.4	2 506	51.3
Other income	593	9.7	484	8.2	707	10.0	389	8.0
Current unpaid borrowings	208	3.4	830	14.0	641	9.1	997	20.4
Total cash income	$6 110	100	$5 926	100	$7 071	100	$4 886	100
Operator's cash expenses								
Livestock purchases	$ 359	7.3	$ 671	13.9	$ 723	14.3	$ 858	21.3
Capital purchases	931	18.8	1 103	22.9	723	14.3	425	10.6
Current farm operations	2 586	52.3	2 140	44.3	2 379	47.2	1 585	39.4
Interest	0	0	30	.6	86	1.7	146	3.6
Family living	1 066	21.6	885	18.3	1 136	22.5	1 011	25.1
Total cash expenses	$4 942	100	$4 829	100	$5 047	100	$4 025	100
Net cash income	1 168	...	1 097	...	2 024	...	861	...
Borrowings and debt repayments								
Net paid on old debts	$ 0	...	$ 540	...	$1 188	...	$1 236	...
Cash not accounted for	1 168	...	557	...	836	...	−475	...
Percent paid on old debts	0	...	90.0	...	53.9	...	41.6	...
Gross borrowings	$ 208	...	$ 944	...	$ 993	...	$1 334	...
Gross repayments	0	...	654	...	1 540	...	1 573	...
Current borrowings unpaid at end of year	208	...	830	...	641	...	997	...

TABLE 22.—CASH INCOME AND EXPENSES OF OWNERS AND PART OWNERS HAVING DIFFERENT DEBT RATIOS, 1940, 1941, AND 1942

Debt ratio	0	1-19%	20-39%	40% and over
1940				
Number of farms	12	11	24	12
Total cash income	$3 726	$3 668	$4 380	$4 915
Total cash expenses	3 411	3 390	3 637	4 407
Net cash income	315	278	743	508
Net paid on old debts	0	124	788	449
Cash not accounted for	315	154	−45	59
1941				
Number of farms	12	9	27	19
Total cash income	$4 349	$4 270	$5 810	$7 377
Total cash expenses	3 694	3 898	4 629	5 547
Net cash income	655	372	1 181	1 830
Net paid on old debts	0	244	979	1 585
Cash not accounted for	655	128	202	245
1942				
Number of farms	9	15	25	12
Total cash income	$7 563	$5 361	$7 082	$9 311
Total cash expenses	4 856	4 457	4 976	6 259
Net cash income	2 707	904	2 106	3 052
Net paid on old debts	0	1 096	1 363	1 606
Cash not accounted for	2 707	−192	743	1 446

TABLE 23.—CASH INCOME AND EXPENSES OF TENANT FARMERS HAVING DIFFERENT DEBT RATIOS, 1940, 1941, AND 1942

Debt ratio	0	1-19%	20-39%	40% and over
1940				
Number of farms	15	16	20	12
Total cash income	$4 418	$3 599	$3 242	$3 324
Total cash expenses	4 560	3 429	2 663	3 132
Net cash income	−142	170	579	192
Net paid on old debts	33	227	334	398
Cash not accounted for	−175	−57	245	−206
1941				
Number of farms	19	21	22	17
Total cash income	$5 376	$5 402	$4 995	$5 188
Total cash expenses	5 161	4 725	3 628	3 750
Net cash income	215	677	1 367	1 438
Net paid on old debts	0	403	710	1 011
Cash not accounted for	215	274	657	427
1942				
Number of farms	12	23	13	9
Total cash income	$6 110	$5 926	$7 071	$4 886
Total cash expenses	4 942	4 829	5 047	4 025
Net cash income	1 168	1 097	2 024	861
Net paid on old debts	0	540	1 188	1 236
Cash not accounted for	1 168	557	836	−375

Operators With Businesses of Different Size

How both receipts and expenses increased with an increase in the size of farm business, as measured by productive man work units, is shown in Tables 24 and 25.

The difference between receipts and expenditures, it will be noted, increased more from year to year for the larger farms than for the smaller farms. For the owners of the smallest farms this difference

TABLE 24.—CASH INCOME AND EXPENSES OF OWNERS AND PART OWNERS OPERATING BUSINESSES OF DIFFERENT SIZE, 1940, 1941, AND 1942

Productive man work units	Less than 400	400-549	550-699	700 and over
1940				
Number of farms	17	15	18	9
Total cash income	$2 623	$4 415	$4 694	$5 981
Total cash expenses	2 273	3 645	4 387	5 122
Net cash income	350	770	307	859
Net paid on old debts	226	628	352	677
Cash not accounted for	124	142	−45	182
1941				
Number of farms	16	16	20	15
Total cash income	$3 557	$5 197	$6 254	$8 166
Total cash expenses	2 879	3 963	5 119	6 529
Net cash income	678	1 234	1 135	1 637
Net paid on old debts	782	1 009	672	1 110
Cash not accounted for	−104	225	463	527
1942				
Number of farms	11	13	20	17
Total cash income	$3 029	$6 228	$7 314	$10 393
Total cash expenses	2 601	4 798	5 311	6 638
Net cash income	429	1 430	2 003	3 755
Net paid on old debts	433	937	1 488	1 358
Cash not accounted for	−4	493	515	2 397

averaged $350 in 1940 and $429 in 1942; but for the owners of the largest farms it averaged $859 in 1940 and $3,755 in 1942. For the tenants on the smallest farms it averaged—$32 in 1940 and $435 in 1942, and for the tenants on the largest farms, $26 in 1940 and $1,821 in 1942.

Thus the operators of the larger farms increased their ability to pay debts or to accumulate cash much more rapidly than the operators of the smaller farms.

TABLE 25.—CASH INCOME AND EXPENSES OF TENANTS OPERATING BUSINESSES OF DIFFERENT SIZE, 1940, 1941, AND 1942

Productive man work units	Less than 400	400-549	550-699	700 and over
1940				
Number of farms	10	17	17	19
Total cash income	$2 088	$3 027	$4 056	$4 592
Total cash expenses	2 120	2 753	3 491	4 566
Net cash income	−32	274	565	26
Net paid on old debts	16	170	361	337
Cash not accounted for	−48	104	204	−311
1941				
Number of farms	13	24	21	21
Total cash income	$2 744	$4 635	$5 844	$6 862
Total cash expenses	2 014	3 726	4 830	5 895
Net cash income	730	909	1 014	967
Net paid on old debts	148	536	662	600
Cash not accounted for	582	373	352	367
1942				
Number of farms	7	20	16	14
Total cash income	$3 041	$5 301	$6 934	$7 661
Total cash expenses	2 606	4 510	5 126	5 840
Net cash income	435	791	1 808	1 821
Net paid on old debts	310	583	746	943
Cash not accounted for	125	208	1 062	878

Operators With Continuous Records

The income and expense patterns of owners and tenants from whom data were obtained for all three years of the study were very similar to those of all the farmers in each of these groups, as can be seen by comparing Tables 26 and 27 with Tables 17 and 18.

TABLE 26.—INCOME, EXPENSES, BORROWINGS, AND DEBT REPAYMENTS OF IDENTICAL OWNERS AND PART OWNERS, 1940, 1941, AND 1942

	Owners			Part owners		
	1940	1941	1942	1940	1941	1942
Number of farms	25	25	25	11	11	11
Operator's cash income						
Crop sales	$ 125	$ 141	$ 205	$ 152	$ 180	$ 97
Livestock sales	774	978	1 450	777	1 169	1 919
Dairy product sales	2 238	3 058	4 191	2 431	3 556	4 190
Other income	507	922	617	984	1 135	2 954
Current unpaid borrowings	410	218	172	334	398	81
Total cash income	$4 054	$5 317	$6 635	$4 678	$6 438	$9 241
Operator's cash expenses						
Livestock purchases	$ 286	$ 475	$ 584	$ 314	$ 371	$ 649
Capital purchases	596	743	451	769	1 094	1 689
Current farm operation	1 721	1 816	2 394	1 960	2 009	2 665
Interest	201	185	174	350	369	305
Family living	766	948	954	867	1 259	1 016
Total cash expenses	$3 570	$4 167	$4 557	$4 260	$5 102	$6 324
Net cash income	484	1 150	2 078	418	1 336	2 917
Borrowings and debt repayments						
Net paid on old debts	$ 604	$ 701	$ 848	$ 441	$ 945	$1 678
Cash not accounted for	−120	449	1 230	−23	391	1 239
Percent paid on old debts	11.6	13.9	18.6	5.0	10.9	20.6
Gross borrowings	$ 460	$ 329	$ 179	$ 392	$ 660	$ 157
Gross repayments	654	812	855	499	1 207	1 754

TABLE 27.—INCOME, EXPENSES, BORROWINGS, AND DEBT REPAYMENTS OF IDENTICAL TENANTS, 1940, 1941, AND 1942

	Cash tenants			Livestock-share tenants		
	1940	1941	1942	1940	1941	1942
Number of farms	23	23	23	13	13	13
Operator's cash income						
Crop sales	$ 222	$ 158	$ 173	$ 42	$ 56	$ 116
Livestock sales	690	1 007	1 364	377	494	1 057
Dairy product sales	2 167	3 035	3 865	1 738	2 336	2 962
Other income	474	787	653	384	627	539
Current unpaid borrowings	320	521	685	338	305	399
Total cash income	$3 873	$5 508	$6 740	$2 879	$3 818	$5 073
Operator's cash expenses						
Livestock purchases	$ 510	$ 669	$ 537	$ 280	$ 76	$ 184
Capital purchases	465	1 004	1 175	440	728	881
Current farm operation	2 007	2 187	2 685	1 270	1 435	1 762
Interest	39	51	42	56	39	33
Family living	751	869	921	813	920	1 185
Total cash expenses	$3 772	$4 780	$5 360	$2 859	$3 198	$4 045
Net cash income	101	728	1 380	20	620	1 028
Borrowings and debt repayments						
Net paid on old debts	$ 142	$ 447	$ 721	$ 184	$ 412	$ 511
Cash not accounted for	−41	281	659	−164	208	517
Percent paid on old debts	16.9	43.8	65.9	17.2	33.7	45.8
Gross borrowings	$ 420	$ 756	$ 704	$ 469	$ 344	$ 537
Gross repayments	242	682	740	315	451	649

Expenditures for Various Purposes

Total expenditures increased progressively during the three-year period in both the owner and the tenant groups (Tables 28 and 29). The amounts which owners and part owners devoted to payments on the principal of their debts increased more in proportion to total expenditures than did the amounts spent for any other single purpose. The expenditures for dairy cattle and for land and improvements became relatively larger, while those for automobiles, machinery and equipment, and other operating expenses became relatively smaller.

In 1941, 9.4 percent of the total expenditures of tenant operators went for the purchase of land. In 1942, 6.4 percent was so used. A larger proportion went for the purchase of dairy cattle in 1942 than in either of the other years, while the proportions going for machinery

TABLE 28.—EXPENDITURES BY OWNERS AND PART OWNERS FOR VARIOUS PURPOSES, 1940, 1941, AND 1942

Items	1940		1941		1942	
Number of farms	59		67		61	
Purchases of—		*perct.*		*perct.*		*perct.*
Land	$ 0	0	$ 0	0	$ 164	2.6
Improvements	64	1.6	149	2.7	250	4.0
Dairy cattle	155	3.8	330	6.0	462	7.4
Other livestock	133	3.2	133	2.4	107	1.7
Machinery and equipment	378	9.1	487	8.8	374	6.0
Automobile	215	5.2	229	4.2	26	.4
Feed	299	7.2	361	6.6	479	7.7
Fertilizer	63	1.5	58	1.1	132	2.1
Other operating expenses	$1 390	33.6	$1 558	28.3	$1 834	29.5
Interest payments	246	6.0	279	5.1	225	3.6
Family living	757	18.3	1 040	18.9	1 030	16.6
Paid on debt principal	435	10.5	877	15.9	1 144	18.4
Total	$4 135	100.0	$5 501	100.0	$6 227	100.0

TABLE 29.—EXPENDITURES BY TENANTS FOR VARIOUS PURPOSES, 1940, 1941, AND 1942

Items	1940		1941		1942	
Number of farms	63		79		57	
Purchases of—		*perct.*		*perct.*		*perct.*
Land	$ 0	0	$ 454	9.4	$ 351	6.4
Improvements	0	0	15	.3	0	0
Dairy cattle	269	7.4	344	7.1	549	10.0
Other livestock	109	3.0	107	2.2	98	1.8
Machinery and equipment	421	11.5	413	8.5	419	7.7
Automobile	109	3.0	220	4.6	103	1.9
Feed	263	7.2	313	6.5	423	7.7
Fertilizer	30	.8	34	.7	52	1.0
Other operating expenses	$1 435	39.4	$1 488	30.8	$1 725	31.6
Interest payments	55	1.5	60	1.2	55	1.0
Family living	707	19.4	868	17.9	1 000	18.3
Paid on debt principal	248	6.8	523	10.8	684	12.6
Total	$3 646	100.0	$4 839	100.0	$5 459	100.0

and equipment and for other operating expenses were considerably lower in 1941 and 1942 than in 1940. The proportion of the total expenditures applied to the payment of the principal of debts averaged lowest in 1940 and highest in 1942.

POSSIBILITIES OF BUYING FARMS FROM EARNINGS

The eventual goal of most farm operators is to own and operate a farm relatively free of debt. The following analysis will show the approximate amounts of earnings available to these farm operators for purchasing land and improvements.

In arriving at the earnings available for purchasing farms, all expenses—including interest paid on debts, the actual cash cost of family living, farm operating costs, and the purchase of items of working capital—were subtracted from the total cash income. The difference was considered to be available to the operator for the purchase of land and improvements. It was assumed that the expenditures for working capital during 1940, 1941, and 1942 were adequate not only to maintain this capital but to allow for such expansion as would be expected in a progressive business. In the main the increases in the prices of the items included in working capital caused the increased inventory values. Borrowings and repayments of debts were excluded from this calculation.

Earnings Available to Owners and Part Owners

For farms of different size, the investments of owners and part owners in farm working capital, the increases in their net worth, and the amounts of funds available for purchases of land and improvements in 1940, 1941, and 1942 are shown in Table 30.

The total investment and the investment in land and improvements varied somewhat in the different years because of variation in the sample of farms studied rather than because of changes in valuations. These differences, however, were not significant.

Earnings available to owners and part owners for land purchases increased with the size of the farm. For the three-year period the averages for farms of different size, from small to large, were: $189, $731, $877, and $1,824. At these rates it would take the operators in these different groups roughly 52.7, 19.3, 21.0, and 10.8 years, respectively, to accumulate earnings equal to the value of farms of the

TABLE 30.—EQUITY OF OWNER AND PART-OWNER OPERATORS IN TOTAL FARM INVESTMENT AND IN LAND AND IMPROVEMENTS, INCREASE IN NET WORTH, AND CASH AVAILABLE FOR SAVINGS OR EXPANSION, 1940, 1941, AND 1942

Year	Equity in total investment	Equity in land and improvements	Increase in net worth	Cash available for savings or expansion
Less than 400 productive man work units				
1940	$16 215	$10 482	$ 462	$ 148
1941	15 237	9 943	442	157
1942	15 329	9 470	868	261
Average	15 594	9 965	591	189
400 to 549 productive man work units				
1940	$21 397	$14 812	$ 684	$ 44
1941	21 702	13 698	2 333	816
1942	24 170	13 848	2 919	1 333
Average	22 423	14 119	1 979	731
550 to 699 productive man work units				
1940	$28 238	$19 316	$ 769	$ 152
1941	30 537	19 259	2 558	872
1942	27 678	16 767	3 136	1 607
Average	28 818	18 447	2 154	877
700 productive man work units and over				
1940	$30 937	$20 638	$1 745	$ 787
1941	33 662	20 310	4 116	1 107
1942	32 668	18 128	5 681	3 579
Average	32 422	19 692	3 847	1 824

size they were operating (number of years determined by dividing value of land and improvements by average earnings). Expressed another way, the owners and part owners of the largest farms could accumulate in cash the value of the farms they operated in one-fifth the time it would take the owners and part owners of the smallest farms to accumulate the value of their farms.

Thus, at least in periods of rising prices, it is much easier for an operator of a large farm to buy a large farm from his farm earnings than it is for the operator of a small farm to buy a small farm from his earnings, and the same can be said for tenants (page 561).

The above figures are of course averages—some men would do better, some not do so well. Also it must be remembered that they represent the periods required by men *in the capital position of the men studied*. The owners and part owners operating the largest farms had equities which averaged approximately $32,000. At 4-percent interest this amount of money would earn $1,280 annually, which is about two-thirds of the average amount of cash available to these operators yearly for savings and expansion. If this money were invested where it would draw interest, the interest earned would help to shorten the

time required to accumulate enough capital for the purchase of an equivalent farm; but if the savings had to be used to make down payments and the rest of the purchase money had to be borrowed, the periods would be lengthened because of the necessity of using part of the surplus cash for interest. Usually land is purchased by men who have some initial capital.

Earnings Available to Tenants

The funds which tenants had available for the purchase of land and improvements (Table 31)—calculated as explained above—increased with the size of the farm, averaging during the three-year period $85, $260, $343, and $660 respectively for the four groups. For these tenants to acquire enough capital to buy farms of the same size and with the same land and improvements valuation as those operated by owners and part owners would take 117.2, 54.3, 53.8, and 29.8 years respectively.

Obviously it would be difficult for most of these tenants, after providing for operating and living costs and needed working capital, to save out of earnings such as were realized in this period the neces-

TABLE 31.—TENANTS' EQUITY IN TOTAL FARM INVESTMENT AND IN LAND AND IMPROVEMENTS, INCREASE IN NET WORTH, AND CASH AVAILABLE FOR SAVINGS OR EXPANSION, 1940, 1941, AND 1942

Year	Equity in total investment	Increase in net worth	Cash available for savings or expansion
Less than 400 productive man work units			
1940	$2 744	$ 124	$ −411
1941	3 222	869	341
1942	4 491	1 080	325
Average	3 486	691	85
400 to 549 productive man work units			
1940	$5 348	$ 570	$ 25
1941	6 425	1 382	328
1942	7 250	1 756	427
Average	6 341	1 236	260
550 to 699 productive man work units			
1940	$7 564	$ 642	$ 60
1941	9 076	1 825	−186
1942	9 884	2 377	1 155
Average	8 841	1 615	343
700 productive man work units and over			
1940	$7 872	$ 851	$ −372
1941	9 946	2 375	559
1942	10 761	3 075	1 794
Average	9 526	2 100	660

sary money with which to buy the farms they were operating. The tenants operating the largest farms would apparently have the best chances. They could accumulate in cash the value of the farms they were operating in one-fourth the time it would take the tenants of the smallest farms to accumulate the value of their farms.

SOME CHARACTERISTICS OF THESE FARMS AND THEIR OPERATORS

Owner and Tenant Farms and Operators

As measured by productive man work units, acres, or cows (Table 32), the tenants operated larger farms than the owners and part

TABLE 32.—VARIOUS ITEMS CONCERNING FARMS, FARM FAMILIES, AND FARM BUSINESSES OF OWNERS, PART OWNERS, AND TENANTS, 1940, 1941, AND 1942

	Owners and part owners			Tenants		
	1940	1941	1942	1940	1941	1942
Number of farms	59	67	61	63	79	57
Size of farm business						
Productive man work units	539	562	591	624	607	612
Acres—owned	126	134	128	0	0	0
—rented	14	14	26	157	154	151
—total	140	148	154	157	154	151
Number of dairy cows	20.3	21.4	22.2	23.9	24.5	25.1
Months of labor—total	23.4	25.5	24.4	22.6	22.3	23.7
—hired	5.7	6.9	5.4	5.9	5.1	3.8
Productivity measures						
Pounds of 3.5-percent milk per cow	7 472	7 676	7 616	7 187	7 547	7 337
Bushels of corn per acre	58	63	64	52	60	62
Tons of legume hay per acre	2.0	1.9	2.3	1.9	1.7	....
Land use						
Acres per cow	6.9	6.9	6.9	6.6	6.3	6.0
Percent of total acres in crops	71.3	71.9	68.7	69.5	69.2	70.6
Percent of crop acres						
—in corn and silage	31.1	34.2	34.9	36.8	36.3	37.9
—in soil-depleting crops	62.7	65.3	63.0	69.9	67.4	66.6
—in hay and rotation pasture	42.9	38.9	36.7	36.6	34.4	33.4
Percent of total acres in permanent pasture	18.6	21.5	24.5	21.7	23.8	22.6
Limestone applied in last 5 years, tons	46	60	....	21	31	....
Phosphate applied in last 5 years, tons	3.4	5.9	....	.5	.6	....
Dairy herd						
Percent of cows home raised	70	65	....	51	49	....
Percent of cows replaced during year	8	15	....	16	15	....
Value of cows bought per $100 worth of cows sold	$167	$156	....	$169	$157	....
Number of cows purchased						
—from dealers	1.1	1.9	....	2.5	2.3	....
—at auctions	.4	.8	....	.8	.7	....
—from farmers	.2	.5	....	.6	.6	....
Number of cows reported diseased						
—home raised	.6	2.1	....	1.3	1.4	....
—purchased	.8	1.3	....	2.3	1.6	....
Personal characteristics						
Age of operator	52	53	54	47	47	49
Years on farm	18	20	19	7	7	8
Number in family, total	4	4	4	4	4	4
Number over 14 years old	3	3	3	3	3	3

owners, but they utilized less labor. Both the tenants' milk production per cow and their crop yields averaged lower. They had more heavily stocked farms, a slightly higher percentage of cropland in corn, silage, and soil-depleting crops, and a slightly smaller percentage in hay and pasture. Also, during the last five years they had applied less lime and phosphate to their farms than had the owners and part owners.

The tenants raised a smaller percentage of their cows than did the owners and part owners. Both groups purchased cows chiefly from dealers.

The tenants were about five years younger than the owners, their average age in 1941 being about 47 years, owners about 53 years. The owners had been on the farms they were operating about 20

TABLE 33.—VARIOUS ITEMS CONCERNING FARMS, FARM FAMILIES, AND FARM BUSINESSES OF CASH TENANTS AND LIVESTOCK-SHARE TENANTS, 1940, 1941, AND 1942

	Cash tenants			Livestock-share tenants		
	1940	1941	1942	1940	1941	1942
Number of farms	40	50	37	23	29	20
Size of farm business						
Productive man work units	552	551	537	751	703	751
Acres—owned	0	0	0	0	0	0
—rented	146	146	140	178	166	171
—total	146	146	140	178	166	171
Number of dairy cows	20.9	22.1	21.7	28.9	28.2	31.5
Months of labor—total	22.1	21.7	23.4	23.4	23.3	24.5
—hired	5.7	5.0	3.6	6.0	5.3	4.3
Productivity measures						
Pounds of 3.5-percent milk per cow	7 414	7 547	7 357	6 868	7 547	7 307
Bushels of corn per acre	50	60	57	54	61	73
Tons of legume hay per acre	1.8	1.5	2.2	1.9	1.9	2.4
Land use						
Acres per cow	7.0	6.6	6.4	6.2	5.9	5.4
Percent of total acres in crops	72.2	68.5	68.9	67.7	70.4	73.2
Percent of crop acres						
—in corn and silage	37.2	38.1	40.0	36.2	33.3	34.5
—in soil depleting crops	70.4	70.4	69.0	68.9	62.1	62.2
—in hay and rotation pasture	36.9	33.1	30.3	36.2	36.5	37.8
Percent of total acres in permanent pasture	20.0	24.9	25.5	24.2	21.9	20.0
Limestone applied in last 5 years, tons	14	23	....	36	46	....
Phosphate applied in last 5 years, tons	.5	.5	....	.7	.7	....
Dairy herd						
Percent of cows home raised	50	50	....	52	47	....
Percent of cows replaced during year	19	17	....	14	10	....
Value of cows bought per $100 worth of cows sold	$172	$162	....	$162	$135	....
Number of cows purchased						
—from dealers	2.2	2.7	....	3.0	1.8	....
—at auctions	1.2	.7	....	.2	.5	....
—from farmers	.6	.6	....	.8	.6	....
Number of cows reported diseased						
—home raised	1.5	1.3	....	1.0	1.7	....
—purchased	2.1	1.1	....	2.6	2.3	....
Personal characteristics						
Age of operator	48	47	50	46	46	47
Years on farm	7	7	8	6	6	8
Number in family, total	4	4	4	5	4	5
Number over 14 years old	3	3	3	3	3	3

years, the tenants about 8 years. The size of the family in each group averaged four.

As measured by all four factors (productive man work units, acres, cows, and months of labor utilized in running the farm), the livestock-share tenants operated larger farms than the cash tenants, altho the difference in months of labor used was small (Table 33). In 1940 the share tenants had lower milk production per cow than the cash tenants; in the other two years this factor did not differ significantly. They had better crop yields, their farms were more heavily stocked and became increasingly more heavily stocked during these years. The cash tenants had a higher percentage of land in corn, silage, and soil-depleting crops and a lower proportion in soil-building crops, hay, and rotated pasture. During the last five years less limestone and phosphate had been applied to their farms. Between these tenant groups there were no significant differences in age of operator, in the number of years he had operated the farm, or in size of family.

Farms With Different Debt Ratios

The number of cows per farm in the owner groups (Table 34) tended to be higher in proportion to debt ratios in 1940 and 1941 than in 1942. Some of the older men dropped out of the sample, and meanwhile some of the farmers of the higher income groups paid off their debts. These changes explain why in 1942 the number of cows on the low-debt farms was larger than in the other years. In the first two years the owners with the higher debt ratios had higher milk production per cow, but this was not true in the 1942 sample. The owner-operated farms with the higher debt ratios had more acres per cow and more total acres (Table 6, page 532). There were no significant differences in percentage of crop acres in soil-depleting crops. As other studies have shown, this factor is not related to debt, at least under the conditions which have prevailed since 1934. The owners with no debts raised a smaller percentage of their cows. Except in 1942 the no-debt farmers were older men.

Among tenants (Table 35), the no-debt farmers milked larger herds and had higher production per cow. Lower production per cow was characteristic of the high-debt tenants. Acres per cow tended to decrease as debts decreased. Except in 1940, when the percentage of crop acres in soil-depleting crops tended to be positively correlated with debt ratios, this factor did not vary in any systematic fashion with debt. The percentage of dairy cows raised was negatively correlated with debt; that is, high-debt tenants bought more of their cows, indi-

TABLE 34.—SELECTED ITEMS CONCERNING OWNER AND PART-OWNER FARMS CLASSIFIED BY DEBT-TO-PROPERTY RATIOS, 1940, 1941, AND 1942

Debt ratio	0	1-19%	20-39%	40% and over
Number of dairy cows				
1940	19.9	17.4	19.0	23.7
1941	19.2	21.8	20.9	23.2
1942	25.3	22.2	21.0	22.6
Production per cow, pounds of 3.5-percent milk				
1940	6 797	7 147	7 769	7 208
1941	7 048	7 147	7 972	7 844
1942	7 801	7 418	7 672	7 592
Acres per cow				
1940	7.3	6.3	7.0	7.6
1941	6.6	5.6	6.4	8.4
1942	6.8	6.3	6.9	7.7
Percent of crop acres in soil-depleting crops				
1940	62.8	58.8	63.9	64.1
1941	64.8	59.6	67.4	65.1
1942	60.3	61.9	64.8	62.8
Percent of dairy herd home raised				
1940	59	60	77	67
1941	57	73	68	64
Average age of operators				
1940	62	51	55	49
1941	61	48	53	53
1942	52	55	54	55

cating a tendency to keep more of their limited capital in milk cows and less in replacement stock.

The younger the operators, the higher, on the average, were the debts, as would be expected, for younger men, starting farming, usually must borrow and then gradually retire their indebtedness.

TABLE 35.—SELECTED ITEMS CONCERNING TENANT FARMS CLASSIFIED BY DEBT-TO-PROPERTY RATIOS, 1940, 1941, AND 1942

Debt ratio	0	1-19%	20-39%	40% and over
Number of dairy cows				
1940	29.1	22.3	23.0	21.5
1941	27.3	21.4	25.7	23.6
1942	28.2	22.3	28.5	23.3
Production per cow, pounds of 3.5-percent milk				
1940	7 878	7 254	7 245	6 201
1941	7 954	7 996	7 467	7 211
1942	7 625	7 357	7 602	6 533
Acres per cow				
1940	6.0	6.4	6.9	7.6
1941	5.8	6.7	6.4	6.3
1942	5.9	5.9	5.9	6.7
Percent of crop acres in soil-depleting crops				
1940	58.3	71.5	67.7	77.3
1941	67.7	71.4	68.2	67.4
1942	64.2	68.5	64.3	68.1
Percent of dairy herd home raised				
1940	65	58	47	31
1941	59	45	49	27
Average age of operators				
1940	48	49	47	44
1941	51	47	46	42
1942	54	49	48	42

Farms of Different Size

The owners having the smallest farms, as measured by productive man work units, averaged about 12 cows; those having the largest farms, about 30 cows (Table 36). Except in 1940, production per cow averaged higher on those farms where more cows were milked. Apparently the operators of the larger farms found it possible to increase production per cow during these years, particularly in 1941. The operators of the smaller farms tended to stock them more heavily, a fact that suggests that size of farm was a factor that hindered further

TABLE 36.—SELECTED ITEMS CONCERNING OWNER AND PART-OWNER FARMS GROUPED BY SIZE OF BUSINESS, 1940, 1941, AND 1942

Productive man work units	Under 400	400-549	550-699	700 and over
Number of dairy cows				
1940	12.2	17.9	22.4	32.2
1941	11.7	18.6	23.4	30.7
1942	11.4	17.8	22.9	31.0
Production per cow, pounds of 3.5-percent milk				
1940	7 748	7 146	7 553	7 421
1941	7 218	7 590	7 888	7 914
1942	7 258	7 378	7 597	8 037
Acres per cow				
1940	7.0	6.4	7.8	6.0
1941	6.0	6.3	7.6	7.3
1942	6.2	6.5	7.3	7.1
Percent of crop acres in soil-depleting crops				
1940	62.8	59.5	65.6	62.3
1941	60.0	69.8	64.7	66.9
1942	55.6	58.0	66.5	63.5
Percent of dairy herd home raised				
1940	60	66	75	80
1941	49	63	71	73
Average age of operators				
1940	58	52	50	48
1941	59	49	54	52
1942	59	52	53	55

increases in these herds. The owners of the larger farms tended to put more of their cropland in soil-depleting crops. They also raised more of their cows, a fact that indicates that they were not so limited in the use of their land. Among the operators of the smaller farms were more older men.

The tenants having the smallest farms averaged 12 to 13 cows, compared with 35 to 40 cows for those having the largest farms (Table 37). Production per cow was positively correlated with size of farm, the correlation in this case being high. In 1941 and 1942 the tenants on the larger farms tended to stock them more heavily than the tenants on the smaller farms. The tenants on the smaller farms had a higher percentage of land in soil-depleting crops, the percentage

TABLE 37.—SELECTED ITEMS CONCERNING TENANT FARMS GROUPED BY SIZE OF BUSINESS, 1940, 1941, AND 1942

Productive man work units	Under 400	400-549	550-699	700 and over
Number of dairy cows				
1940	12.4	18.1	23.5	34.7
1941	12.0	19.7	24.8	35.9
1942	12.6	19.0	25.0	40.2
Production per cow, pounds of 3.5-percent milk				
1940	7 026	7 265	7 489	6 927
1941	7 038	7 550	7 367	7 988
1942	7 049	7 118	7 348	7 790
Acres per cow				
1940	5.7	7.7	6.8	6.6
1941	7.5	6.8	6.1	6.1
1942	7.7	6.6	5.9	5.4
Percent of crop acres in soil-depleting crops				
1940	68.2	71.2	69.6	69.7
1941	77.6	67.9	68.1	64.9
1942	78.9	70.5	67.3	60.3
Percent of dairy herd home raised				
1940	36	62	45	53
1941	42	48	43	56
Average age of operators				
1940	48	47	46	48
1941	49	46	47	46
1942	54	44	53	48

becoming even higher during the period; whereas the tenants on the larger farms were reducing their acreage in soil-depleting crops. Tenants on the larger farms raised a larger percentage of their cows than those on the smaller farms. There was no significant difference in age among these men.

CHANGES IN MILK PRODUCTION

On the 72 farms for which continuous records from 1940 thru 1942 were available, the average milk production per farm increased 17,560 pounds or 10.7 percent in 1941 over 1940 (Table 38), and 3,537 pounds or 1.9 percent in 1942 over 1941. On a percentage basis the part owners made the largest increases in 1941, the cash tenants the smallest. In 1942 the production of the part owners fell below that of the previous year, while the production of the full owners showed the largest increase.

When the farms are grouped by size, the 1941 increases in milk production on owner farms are found to have been directly correlated with size of farm, but in 1942 no correlation was indicated. Among tenants there was no clear relationship between size of business and increases in milk production either in 1941 or 1942. Among owners the more heavily indebted groups made the largest increases in 1941, but not in 1942. Among tenants, debt ratios were not significantly related

TABLE 38.—POUNDS OF 3.5-PERCENT MILK PRODUCED PER FARM ON 72 MCHENRY COUNTY FARMS IN 1940, 1941, AND 1942

Grouping	Number of farms	1940	1941	1942	Increase 1941 over 1940		Increase 1941 over 1942	
		lb.	*lb.*	*lb.*	*lb.*	*perct.*	*lb.*	*perct.*
Tenure of operators								
Owners	25	150 072	165 294	176 668	15 222	10.1	11 374	6.9
Part owners	11	160 031	188 112	182 130	28 081	17.5	−5 982	−3.2
All owners	36	153 394	172 396	178 443	19 002	12.4	6 047	3.5
Cash tenants	23	151 569	162 415	164 023	10 846	7.2	1 608	1.0
Livestock-share tenants	13	216 150	243 086	243 241	26 936	12.5	155	.1
All tenants	36	175 602	191 628	192 707	16 026	9.1	1 079	.6
All farms	72	164 714	182 274	185 811	17 560	10.7	3 537	1.9
Size of farm (p.m.w.u.)								
Owners and part owners								
Under 400	7	97 381	94 279	98 951	−3 102	−3.2	4 676	5.0
400 to 549	11	137 374	156 175	158 443	18 801	13.7	2 268	1.5
All under 550	18	121 737	131 188	134 676	9 451	7.8	3 488	2.7
500 to 699	11	166 631	193 545	202 320	26 914	16.2	8 775	4.5
700 and over	7	212 862	251 446	259 022	38 584	18.1	7 576	3.0
All 550 and over	18	185 563	216 776	224 950	31 213	16.8	8 174	3.8
Tenants								
Under 400	6	87 375	94 892	95 472	7 517	8.6	580	.6
400 to 549	7	138 869	148 221	148 629	9 352	6.7	408	.3
All under 550	13	113 952	123 003	123 605	9 051	7.9	602	.5
550 to 699	13	164 812	176 711	180 579	11 899	7.2	3 868	2.2
700 and over	10	264 579	303 137	303 820	38 558	14.6	683	.2
All 550 and over	23	209 204	230 225	232 086	21 021	10.0	1 861	.8
Debt ratio								
Owners and part owners								
0	6	152 258	155 639	154 330	3 381	2.2	−1 309	−.8
1 to 19 percent	5	123 757	137 680	162 652	13 923	11.3	24 972	18.1
All under 20 percent	11	139 018	147 673	158 430	8 655	6.2	10 757	7.3
20 to 39 percent	17	155 808	179 282	185 823	23 474	15.1	6 541	3.6
40 percent and over	8	167 788	192 715	190 583	24 927	14.9	−2 132	−1.1
All 20 percent and over	25	159 907	183 794	187 612	23 887	15.0	3 818	2.1
Tenants								
0	9	240 037	264 528	270 277	24 491	10.2	5 749	2.2
1 to 19 percent	11	142 672	154 825	156 239	12 153	8.5	1 414	.9
All under 20 percent	20	184 847	202 477	205 998	17 630	9.5	3 521	1.7
20 to 39 percent	11	168 835	182 860	182 693	14 025	8.3	−167	−.1
40 percent and over	5	152 445	166 998	163 045	14 553	9.5	−3 953	−2.4
All 20 percent and over	16	164 342	178 297	176 708	13 955	8.5	−1 589	−.9

to changes in milk production, but the operators of the more heavily indebted farms did produce less milk in 1942 than in 1941.

If the two years are taken together, the operators of the larger farms and the more heavily indebted farms are found to have increased their milk production more than the other operators.

Since the samples are small, the above results cannot be taken as indicating definitely what large groups of similar farmers actually did during these years. It would appear, however, that farmers reacted differently to pressure to increase their milk production in this period.

TOTAL FARM BUSINESS

In studies of farm financing both the operator and the business are of interest. The analysis up to this point has, however, dealt only with

the *operator's* capital and income. In the case of tenant-operated farms no figures have been included to show the extent of the capital furnished by the landlord or his share of the income. In order, therefore, to give a more complete picture of the farms in these studies and furnish a basis for comparing them with those included in other farm-income studies, capital and income data for the entire farm business in 1942 were obtained for 118 farms. Averages for these farms, grouped by tenure of operators, are shown in Table 39.

The farms with the smallest total capital investments were operated by owners and cash tenants; those with the largest were operated by part owners and livestock-share tenants. The rates earned on total investment varied but little among the different tenure groups, averaging 13.6 percent for the combined owner and part-owner group and 13.8 for the tenant group. Likewise, for the farm as a whole there was little variation in the calculated labor and management wage, which averaged $3,015 for the farms of the owners and part owners and $3,045 for the farms operated by tenants. However, the groups made up of livestock-share tenants who owned less than 50 percent of the cows showed the highest rate earned on total investment, 19.1 percent, and the highest labor and management wage (farm), $5,473. On this group of farms the landlords took a direct interest in the business. This group also had the highest average production of milk per cow and the highest yield of corn per acre.

The figures showing the operator's share in the business of these farms give a different picture. The rate earned on his share of the capital was much higher than the rate earned on the total farm business, averaging 33.4 percent for all tenants. The operator's labor and management wage was lowest for the livestock-share tenants owning 50 percent of the cows, $1,832, and highest for the part owners, $3,296. For owners and part owners together it averaged $3,058; for all tenants, $2,602.

The landlord's rate of return on his investment averaged 3.5 percent on the farms rented for cash; 4 percent on the part-owner farms; and 11.4 percent on the livestock-share farms. These differences reflect the tendency of the earnings of landlords who rent for cash to lag behind in periods of rising incomes, while earnings of those who rent for shares tend to follow changes in income.

None of the measures of earnings varied with debt ratios in any uniform fashion (Table 40).

Among the owners the rates earned on total farm capital, and particularly the labor and management wage, increased with the size

TABLE 39.—SELECTED ITEMS CONCERNING TOTAL 1942 BUSINESS OF 118 MCHENRY COUNTY FARMS GROUPED BY TENURE OF OPERATORS

Item	Farms operated by—			Farms operated by cash tenants	Farms operated by livestock-share tenants			All tenants
	Owners	Part owners	Owners and part owners		Owning half of cows	Owning less than half of cows	All l-s share tenants	
Number of farms	43	18	61	37	13	7	20	57
Total investment, beginning of year	$23 180	$31 543	$25 639	$22 022	$31 841	$32 824	$32 186	$25 581
Rate earned on total investment	14.2%	12.7%	13.6%	12.9%	12.6%	19.1%	15.0%	13.8%
Labor and management wage (farm)	$ 2 931	$ 3 219	$ 3 015	$ 2 519	$ 3 243	$ 5 473	$ 4 024	$ 3 045
Acres—total	129	212	154	140	167	179	171	151
—tillable	92	137	106	96	126	123	125	106
Months of labor on farm—hired	4.9	6.7	5.4	3.6	1.3	9.8	4.3	3.8
—family	7.4	7.7	7.5	8.7	11.2	3.3	8.4	8.6
—operator's	11.6	11.3	11.5	11.1	11.5	12.0	11.7	11.3
—total	23.9	25.7	24.4	23.4	24.0	25.1	24.4	23.7
Number of dairy cows	21.9	22.9	22.2	21.7	30.7	33.0	31.5	25.1
Milk production per cow, pounds	7 669	7 499	7 616	7 357	6 880	8 386	7 307	7 337
Corn yields, bushels	69	57	64	57	71	77	73	62
Number of hogs sold	19.1	33.5	23.3	16.0	33.8	40.4	36.2	23.0
Operator's earnings								
Rate earned on operator's investment	14.2%	15.5%	14.6%	34.4%	21.6%	53.2%	31.2%	33.4%
Labor and management wage	$ 2 931	$ 3 296	$ 3 038	$ 2 748	$ 1 832	$ 3 264	$ 2 333	$ 2 602
Landlord's earnings								
Rate earned on landlord's investment	.....	4.0%	4.0%	3.5%	10.5%	12.9%	11.4%	7.3%

TABLE 40.—SELECTED ITEMS CONCERNING TOTAL 1942 BUSINESS OF 118 FARMS GROUPED BY TENURE OF OPERATORS AND BY DEBT RATIO

Item	Farms with debt ratios indicated operated by owners and part owners				Farms with debt ratios indicated operated by tenants			
	0	1-19%	20-30%	40% and over	0	1-19%	20-39%	40% and over
Number of farms	9	15	25	12	12	23	13	9
Total investment	$28 518	$21 144	$25 445	$29 529	$27 823	$22 684	$29 177	$24 834
Rate earned on total investment	15.3%	11.1%	13.9%	14.1%	14.4%	14.2%	13.6%	12.3%
Labor and management wage (farm)	$ 3 689	$ 2 087	$ 3 114	$ 3 470	$ 3 399	$ 2 894	$ 3 328	$ 2 563
Number of dairy cows	25.3	22.2	21.0	22.6	28.2	22.3	28.5	23.3
Milk production per cow, pounds	7 801	7 418	7 672	7 592	7 625	7 357	7 602	6 533
Operator's earnings								
Rate earned on operator's investment	16.7%	11.4%	15.1%	15.0%	36.7%	33.5%	31.0%	32.4%
Labor and management wage	$ 3 764	$ 2 053	$ 3 146	$ 3 504	$ 3 048	$ 2 475	$ 2 779	$ 2 090
Landlord's earnings								
Rate earned on landlord's investment	2.2%	7.1%	3.7%	3.6%	6.7%	7.5%	7.5%	7.4%

TABLE 41.—SELECTED ITEMS CONCERNING TOTAL 1942 BUSINESS OF 118 FARMS GROUPED BY TENURE OF OPERATORS AND SIZE OF BUSINESS

Item	Farms operated by owners and part owners, requiring productive man units indicated				Farms operated by tenants, requiring productive man work units indicated			
	Under 400	400-549	550-699	700 and over	Under 400	400-549	550-699	700 and over
Number of farms	11	13	20	17	7	20	16	14
Total investment	$13 037	$21 574	$27 814	$34 358	$15 255	$19 439	$25 775	$39 321
Rate earned on total investment	5.0%	15.2%	12.5%	16.0%	7.5%	12.7%	14.2%	15.5%
Labor and management wage (farm)	$ 812	$ 2 993	$ 2 932	$ 4 557	$ 1 223	$ 2 267	$ 3 208	$ 4 890
Number of dairy cows	11.4	17.8	22.9	29.1	12.6	19.0	25.0	40.2
Milk production per cow, pounds	7 258	7 378	7 597	7 563	7 049	7 118	7 348	7 790
Operator's earnings								
Rate earned on operator's investment	5.0%	15.4%	13.3%	18.1%	17.9%	32.4%	33.2%	37.5%
Labor and management wage	$ 812	$ 2 996	$ 2 903	$ 4 672	$ 1 299	$ 2 183	$ 2 800	$ 3 629
Landlord's earnings								
Rate earned on landlord's investment	.....	4.2%	6.0%	2.5%	4.4%	5.6%	7.2%	9.1%

of the farm business (Table 41). On the tenant farms the tendency of rates earned to increase with size of business was even more marked than on the owner farms. Since production was profitable in 1942, the farms producing the most would earn the highest rates. In the owner group the smallest farms, measured by size of business, provided an average labor and management wage (farm) of $812, whereas the largest farms yielded $4,557. Similar figures for the smallest and largest tenant farms were $1,223 and $4,890 respectively.

On the tenant farms both the tenant's labor and management wage and the rate earned on the landlord's investment increased with size of farm. More of the smaller than of the larger tenant farms were rented for cash, and so not all the landlords of the smaller farms shared in the increased income.

KINDS OF CREDIT AND HOW USED

Debts of All Farmers

At the end of 1942 the farmers included in this study owed, on the average, one-third as many short-term as long-term debts (Table 42). The long-term debts of owners and part owners were secured chiefly by first mortgages, only 15.6 percent of the long-term debts of owners and 24.6 percent of those of part owners being second mortgages or other kinds of debts. Short-term debts of owners and of tenants consisted largely of personal notes or chattel mortgages, altho among tenants chattel mortgages were more important than among owners. In 1942 these two forms of debt represented 86 percent of all short-term debts. Conditional sales contracts and personal debts were of minor importance.

Sources of Credit

Owners. At the beginning of the period (December, 1940) the Federal Land Bank, individuals, insurance companies, and the Land Bank Commissioner were the principal holders of the long-term debts of owners (Table 43). During the period the importance of the Federal Land Bank and the Land Bank Commissioner as holders of long-term debts increased in this sample, that of insurance companies increased slightly, while individuals became less important. Commercial banks were not important in this field. The three principal holders of short-term debts of owners and part owners at the beginning of this period were commercial banks, individuals, and the Production Credit Associ-

TABLE 42.—PERCENTAGE EACH CLASS OF DEBT WAS OF TOTAL DEBTS: DATA FOR ALL COOPERATING FARMERS, DECEMBER 31, 1940, 1941, AND 1942

	Owners			Part owners			Tenants			All farms		
	1940	1941	1942	1940	1941	1942	1940	1941	1942	1940	1941	1942
Long-term debts												
Total	$194 785	$255 996	$185 421	$89 560	$110 132	$87 176	$ 5 150	$27 338	$ 9 885	$289 495	$393 466	$282 482
Percent of total												
First land mortgage	90.0	83.4	84.4	75.9	79.0	75.4	0	0	0	84.1	76.4	78.6
Second land mortgage	10.0	14.0	15.6	24.1	21.0	24.6	0	0	0	14.1	15.0	17.9
Other long-term debts	0	2.6	0	0	0	0	100	100	100	1.8	8.6	3.5
Short-term debts												
Total	$ 26 461	$ 34 302	$ 16 514	$20 701	$ 20 559	$16 400	$74 092	$95 397	$59 228	$121 254	$150 258	$ 92 142
Percent of total												
Chattel mortgages	36.3	21.0	48.6	43.3	41.3	29.1	69.2	64.2	63.1	57.6	51.2	54.5
Conditional sales	9.6	15.1	6.0	9.2	10.1	2.1	4.5	11.5	4.4	6.4	12.1	4.3
Personal notes	40.7	58.1	37.2	47.1	41.7	61.7	20.7	18.5	21.1	29.6	30.7	31.2
Unsecured debts	2.2	.8	2.5	0	4.0	3.7	3.6	3.9	1.8	2.7	3.2	2.2
Interest in arrears	.6	.6	2.4	0	1.5	0	1.5	1.4	.1	1.0	1.3	.5
Principal in arrears	9.4	2.7	3.3	.4	1.4	0	0	.1	0	2.1	.8	.6
Other short-term debts	1.2	1.7	0	0	0	3.4	.5	.4	9.5	.6	.7	6.7

TABLE 43.—PERCENTAGE OF LONG-TERM AND SHORT-TERM DEBTS WHICH OWNERS AND PART OWNERS OWED TO VARIOUS LENDING AGENCIES, DECEMBER 31, 1940, 1941, AND 1942

	Owners			Part owners			Owners and part owners		
	1940	1941	1942	1940	1941	1942	1940	1941	1942
Long-term debts									
Total	$194 785	$255 996	$185 421	$89 560	$110 132	$87 176	$284 345	$366 128	$272 597
Percent of total									
Federal Land Bank	29.7	33.9	38.6	25.1	33.2	39.9	28.2	33.7	39.0
Land Bank Commissioner	10.0	14.1	15.6	15.8	19.2	15.0	11.8	15.6	15.4
Individuals	35.9	24.5	11.2	22.3	9.3	9.6	31.6	20.0	10.7
Insurance companies	21.3	23.5	19.9	22.2	24.8	30.9	21.6	23.9	23.4
Commercial banks	3.1	4.0	3.4	2.9	4.5	4.6	3.1	4.1	3.8
Other sources	0	0	11.3	11.7	9.0	0	3.7	2.7	7.7
Short-term debts									
Total	$26 461	$34 302	$16 514	$20 701	$20 559	$16 400	$47 162	$54 861	$32 914
Percent of total									
Commercial banks	46.1	56.2	25.7	30.1	23.9	24.8	39.1	44.1	25.3
Farm Security Administration	6.9	4.5	10.8	0	0	0	3.9	2.8	5.4
Production Credit Association	2.0	4.4	12.4	23.9	30.1	16.9	11.6	14.0	14.7
Individuals	20.9	16.1	24.2	36.7	31.5	50.9	27.8	21.9	37.5
Cattle dealers	0	1.1	7.9	0	1.5	3.7	0	1.2	5.7
Implement dealers	4.5	6.9	3.0	1.1	5.1	.3	3.0	6.2	1.7
Finance companies	4.8	4.8	2.6	2.4	4.2	0	3.8	4.6	1.3
Merchants	2.4	1.6	2.8	.5	.7	3.4	1.6	1.3	3.1
Other sources	1.4	0	4.9	4.9	0	0	2.9	0	2.5
Delinquent taxes	1.0	1.1	0	0	0	0	.6	.7	0
Interest in arrears	.6	.6	3.6	0	1.6	0	.3	1.0	1.8
Principal in arrears	9.4	2.7	2.1	.4	1.4	0	5.4	2.2	1.0

TABLE 44.—PERCENTAGE OF LONG-TERM AND SHORT-TERM DEBTS WHICH TENANTS OWED TO VARIOUS LENDING AGENCIES, DECEMBER 31, 1940, 1941, AND 1942

	Cash tenants			Livestock-share tenants			All tenants		
	1940	1941	1942	1940	1941	1942	1940	1941	1942
Long-term debts									
Total	$ 4 400	$27 338	$ 9 885	$ 750	$.....	$.....	$ 5 150	$27 338	$ 9 885
Percent of total									
Federal Land Bank	0	0	40.0	0	0	0	0	0	40.0
Land Bank Commissioner	0	0	14.5	0	0	0	0	0	14.5
Individuals	0	0	0	0	0	0	0	0	0
Insurance companies	0	18.3	0	0	0	0	0	18.3	0
Commercial banks	100	15.7	0	0	0	0	85.4	15.7	0
Other sources	0	66.0	45.5	100	0	0	14.6	66.0	45.5
Short-term debts									
Total	$44 512	$63 295	$40 570	$29 580	$32 102	$18 658	$74 092	$95 397	$59 228
Percent of total									
Commercial banks	37.9	21.6	21.0	4.5	12.2	14.5	24.6	18.5	18.9
Farm Security Administration	26.9	16.0	14.8	18.5	19.8	26.7	23.5	17.2	18.5
Production Credit Association	6.0	10.8	0	10.4	10.9	11.7	7.7	10.9	3.7
Individuals	7.2	13.6	19.7	14.6	11.6	8.7	9.6	13.0	16.3
Cattle dealers	12.3	18.5	25.0	8.1	1.7	0	11.2	12.8	17.1
Landlords	5.0	7.1	5.2	21.3	21.7	28.9	11.5	12.0	12.7
Implement dealers	.2	3.0	10.4	17.7	12.9	4.0	7.2	6.3	8.4
Finance companies	.6	4.5	.7	.9	3.6	1.8	.7	4.2	1.1
Merchants	.8	3.1	2.7	1.6	2.8	3.7	1.1	3.0	3.0
Other sources	2.3	.8	.2	0	0	0	1.4	.5	.1
Delinquent taxes	0	.2	.2	0	0	0	0	.1	.1
Interest in arrears	.8	.8	.1	2.4	2.6	0	1.5	1.4	.1
Principal in arrears	0	0	0	0	.2	0	0	.1	0

ation. At the end of the period, the importance of individuals as sources of credit had increased, that of commercial banks had declined, and that of the Production Credit Association had increased moderately. Also, the importance of the Farm Security Administration and of cattle dealers had increased, altho both were of minor importance to owners.

Tenants. Among tenants the sources of credit were more varied (Table 44). Cash tenants used somewhat different sources of credit from share tenants. At the end of 1940 one-fourth of the short-term credit used by tenants came from commercial banks and about the same proportion came from the Farm Security Administration. Individuals, cattle dealers, and landlords, all held about 10 percent each, and implement dealers and the Production Credit Association each held about 7 percent of the total. At the end of 1942 the importance of individuals and cattle dealers had increased, the importance of landlords and implement dealers had not changed much, while, in the sample of tenant farms studied, the importance of the banks, the Farm Security Administration, and the Production Credit Association had declined. This situation suggests a trend toward financing by agencies which have some interest other than the extension of credit.

Purpose of Borrowings

The owners' long-term borrowings were principally for refinancing, altho they borrowed a little for improvements (Table 45). The tenants' long-term borrowings were to buy farms or other property. Two tenants purchased farms in 1941, and one in 1942.

In 1940 and 1941 the short-term borrowings of owners were for four principal purposes: operating expenses, and the purchase of farm equipment, dairy cattle, automobiles and trucks; in 1942 they borrowed for only two of these purposes: operating expenses and purchase of dairy cattle. The short-term borrowings of tenants were for the same purposes except that they did not include the purchase of trucks and automobiles, a fact that indicates the tendency of tenants to borrow only for purposes quite directly connected with farm production. In 1942 tenants continued to borrow to buy farm equipment and to refinance. All these purposes are legitimate uses of credit.

Changes in Total Debts

In each year the owner and tenant debts secured by each class of long-term mortgages declined (Tables 46 and 47). The greatest declines were in loans held by commercial banks and individuals, the

TABLE 45.—PURPOSES FOR WHICH EACH YEAR'S BORROWINGS WERE USED

Purpose of borrowing	Owners and part owners			Tenants		
	1940	1941	1942	1940	1941	1942
Long-term borrowing						
Total	$5 773	$9 535	$4 400	$3 000	$25 700	$12 635
Percent of total						
Purchase of land	0	0	0	0	100	80.2
Improvements	17.6	26.6	4.5	0	0	0
Refinancing	82.4	73.4	95.5	100	0	0
Nonfarm property	0	0	0	0	0	19.8
Short-term borrowing						
Total	$15 167	$29 950	$18 928	$28 086	$53 076	$36 338
Percent of total						
Purchase of—						
Dairy cattle	13.8	24.0	47.2	25.1	36.3	36.8
Other livestock	0	0	0	2.7	.1	1.2
Horses	.7	0	0	2.3	.1	0
Farm equipment	13.9	33.1	4.8	30.2	21.7	21.7
Automobile and truck	29.0	16.4	1.6	4.7	10.1	4.4
Current operating expenses	30.5	20.3	34.4	28.3	15.8	14.4
Personal debts	2.0	.5	4.5	3.0	6.2	3.6
Sealed corn	3.2	0	0	2.0	0	0
Interest in arrears	3.9	3.1	0	1.4	1.5	.2
Principal in arrears	2.3	.4	0	.3	0	0
Back taxes	.7	.4	0	0	.1	0
Loan reamortization	0	1.8	2.8	0	0	0
Refinancing	0	0	4.7	0	8.1	17.7

least in loans held by insurance companies. The Federal Land Bank and the Land Bank Commissioner occupied an intermediate position in this respect.

The changes in the short-term debts of owners were more varied. Loans by commercial banks to owners declined, particularly in 1942. Loans by the FSA declined in 1940 and 1941, but increased again in 1942. Loans by the PCA increased in 1940 and 1941, but declined in 1942. Loans by individuals were reduced in 1941, but increased in 1940 and 1942.

The owners reduced the net amount of their debts each year—2.3 percent in 1940, 6.8 percent in 1941, and 15.4 percent in 1942.

Among tenants, debts increased 12.1 percent in 1940; this rise represents an increase in loans from each source except from finance companies and merchants. In 1941 the loans from commercial banks, from the FSA, and from individuals were reduced. In 1942, while the tenants were substantially reducing their short-term debts they were at the same time increasing their long-term debts by practically the same amounts. During this year they reduced all their short-term debts except those to cattle and implement dealers.

It is probable that for the rest of the war period the new credits in this area will be used increasingly for purchases of land by tenants who have accumulated enough cash to make a down payment and for purchases of new equipment when it again becomes available.

TABLE 46.—ACTUAL AND PERCENTAGE CHANGES IN TOTAL DEBTS OF OWNERS AND PART OWNERS AS REPORTED AT THE BEGINNING OF 1940, 1941, AND 1942

Kind of debt	1940			1941			1942		
	Increase	Decrease	Percent change	Increase	Decrease	Percent change	Increase	Decrease	Percent change
Long-term loans, total	.....	$14 293	−4.8	.....	$24 901	−6.4	.....	$43 205	−13.7
Federal Land Bank	.....	6 078	−7.0	.....	11 928	−8.8	.....	6 039	−5.4
Land Bank Commissioner	.....	4 475	−11.8	.....	2 724	−4.5	.....	5 906	−12.3
Individuals	.....	1 442	−1.6	.....	6 844	−8.6	.....	11 000	−27.5
Insurance companies	.....	800	−1.3	.....	2 065	−2.3	.....	8 508	−11.8
Commercial banks	.....	960	−9.9	.....	840	−5.3	.....	4 800	−31.8
Other sources	.....	538	−4.9	.....	500	−4.8	.....	6 952	−24.8
Short-term loans, total	$6 375	.....	+15.6	.....	$ 5 612	−9.3	.....	$12 565	−27.6
Commercial banks	.....	$ 352	−1.9	.....	1 666	−6.4	.....	8 691	−51.1
Farm Security Administration	.....	106	−5.5	.....	277	−15.2	$ 240	.....	+15.6
Production Credit Association	1 848	.....	+51.0	$ 594	.....	+8.4	.....	2 041	−29.7
Individuals	1 207	.....	+10.1	.....	2 705	−18.4	530	.....	+4.5
Cattle dealers	.....	.....	.....	685	.....	(a)	1 212	.....	+176.9
Implement dealers	1 388	.....	+4626.6	1 261	.....	+58.4	.....	2 109	−79.3
Finance companies	.....	41	−2.3	.....	61	−2.4	.....	1 379	−76.4
Merchants	202	.....	+38.1	.....	23	−3.1	368	.....	+57.5
Other sources	760	.....	+121.4	.....	2 189	−100.1	500	.....	+160.8
Delinquent taxes	108	.....	+66.7	.....	164	−29.7	.....	389	−100.0
Interest in arrears	150	.....	(a)	384	.....	+256.0	.....	362	−37.7
Principal in arrears	1 211	.....	+89.8	.....	1 451	−54.5	.....	444	−56.4
Summary									
Total long-term loans	.....	$14 293	−4.8	.....	$24 901	−6.4	.....	$43 205	−13.7
Total short-term loans	$6 375	.....	+15.6	.....	5 612	−9.3	.....	12 565	−27.6
Net change, all debts	.....	7 918	−2.3	.....	30 513	−6.8	.....	55 770	−15.4

[a] No debt in the class at beginning of year.

TABLE 47.—ACTUAL AND PERCENTAGE CHANGES IN TOTAL DEBTS OF TENANTS AS REPORTED AT THE BEGINNING OF 1940, 1941, AND 1942

Kind of debt	1940			1941			1942		
	Increase	Decrease	Percent change	Increase	Decrease	Percent change	Increase	Decrease	Percent change
Long-term debts, total	.....	$226	−4.2	$22 188	.....	+430.8	$4 885	.....	+97.7
Federal Land Bank	.....	....	.....	.....	.....	.....	3 948	.....	.....
Land Bank Commissioner	.....	....	.....	.....	.....	.....	1 437	.....	.....
Individuals	.....	....	.....	.....	.....	.....	.....	.....	.....
Insurance companies	.....	....	.....	5 000	.....	(a)	.....	.....	.....
Commercial banks	.....	100	−2.2	.....	$ 100	−2.3	.....	.....	.....
Other sources	.....	126	−14.4	17 288	.....	+2 305.1	.....	$ 500	−10.0
Short-term loans, total	$8 808	....	+13.5	.....	$ 207	−.2	.....	$5 019	−7.8
Commercial banks	1 602	....	+9.7	.....	9 419	−34.8	.....	1 877	−14.3
Farm Security Administration	1 336	....	+8.3	.....	1 270	−7.2	.....	265	−2.4
Production Credit Association	1 498	....	+35.3	$ 2 249	.....	+27.8	.....	4 136	−65.4
Individuals	33	....	+.4	.....	1 564	−11.2	.....	101	−1.0
Cattle dealers	735	....	+10.3	1 347	.....	+12.4	$7 497	.....	+284.5
Landlords	1 961	....	+29.8	2 654	.....	+30.2	.....	4 543	−37.7
Implement dealers	1 659	....	+44.9	1 429	.....	+30.8	383	.....	+8.3
Finance companies	.....	$288	−35.8	2 719	.....	+211.3	.....	1 252	−66.0
Merchants	.....	458	−35.2	1 966	.....	+212.1	.....	283	−13.7
Other sources	352	....	+52.1	.....	1 027	−68.2	30	.....	+88.2
Delinquent taxes	.....	....	.....	116	(a)	.....	.....	.....	.....
Interest in arrears	378	....	+53.9	543	.....	+66.1	.....	472	−90.6
Principal in arrears	.....	....	.....	50	(a)	.....	.....	.....	.....
Summary									
Total long-term loans	.....	$226	−4.2	$22 188	.....	+430.8	$4 885	.....	+97.7
Total short-term loans	$8 808	....	+13.5	.....	$ 207	−.2	.....	$5 019	−7.8
Net change, all debts	8 582	....	+12.1	21 981	.....	+21.8	.....	134	−.2

[a] No debt in the class at beginning of year.

The ending of the war will have two effects: first, young men will come from the army and industry and take over the operation of many of the farms now operated by older men; second, farm equipment will again become freely available. The result will be an increase in short-term debts created to finance working capital. At the same time, and until a serious break in prices occurs, purchases of land will continue. It is likely that the present owners will continue to liquidate their debts. This will be a period when beginning farmers should be cautious about their borrowings. It will probably pay to wait until price readjustments reduce the costs of starting to farm.

FACTORS INFLUENCING FARM EARNINGS

Records obtained from 113 dairy farms in 1942 were analyzed by using rate earned on investment and labor and management wage as measures of profit and relating them to:

1. **Size of farm** as measured by productive man work units, 590 being used as the dividing line between large and small farms.

2. **Milk production per cow** in terms of 3.5-percent milk, 7,500 pounds a year being used as the line between high and low production.

3. **Degree of specialization** as measured by percentage of gross receipts derived from the sale of dairy products, 65 percent being used as the line between the more specialized and the less specialized farms.

When Earnings Are Measured by Rate Earned

Influence of size of farm. The following averages were calculated showing rate earned on invested capital by various groups of farms:[1]

	Number of farms	*Rate earned*
		perct.
Low production per cow, more specialized		
Large farms	6	8.4 ± 2.12
Small farms	16	9.2 ± 1.55
Difference		(−).8 ± 2.63
High production per cow, more specialized		
Large farms	17	15.5 ± 1.34
Small farms	15	13.3 ± 2.04
Difference		2.2 ± 2.44
Low production per cow, less specialized		
Large farms	19	13.2 ± 1.38
Small farms	15	11.3 ± 2.04
Difference		1.9 ± 2.46
High production per cow, less specialized		
Large farms	15	16.3 ± 1.31
Small farms	10	20.1 ± 2.94
Difference		(−)3.8 ± 3.22

[1]These and the following comparisons were arrived at by cross tabulation.

All farms	*Number of farms*	*Rate earned perct.*
Large	57	14.19 ± .78
Small	56	12.79 ± 1.13
Difference		1.40 ± 1.37

Altho the earnings of large farms were, on the average, $1.40 higher per hundred dollars of invested capital than those of the small farms, this difference was not significant. Likewise when the large and small farms are subdivided into various groups on the basis of production and specialization there is seen to have been no significant differences between them in the rate earned. (Whether the differences between the averages are significant or not depends on whether the standard error of the difference between the two averages—the plus-or-minus (±) figure after each average difference—is more than half the actual difference between the averages.)

Influence of milk production per cow. The rates earned on invested capital by farms with high production per cow were found to exceed the rates earned by farms with low production per cow by the following differences (the actual values for any group are shown in the preceding tabular statement):

More specialized farms	*Difference in rate earned*	Less specialized farms	*Difference in rate earned*
Small	4.1% ± 2.6%	Small	8.8% ± 3.6%
Large	7.1% ± 2.5%	Large	3.1% ± 1.9%
All farms	4.9% ± 1.3%		

Production per cow was thus a significant factor in influencing the rate earned on invested capital. In each of the four subgroups the differences were relatively significant, but they were especially significant for the small, less specialized farms and the large, highly specialized farms.

Influence of degree of specialization. The earnings of farms less specialized in dairying (farms on which less than 65 percent of the total receipts came from the sale of dairy products) exceeded those highly specialized in dairying by the following amounts:

Low production per cow	*Difference in rate earned*	High production per cow	*Difference in rate earned*
Small farms	2.1% ± 2.6%	Small farms	6.8% ± 3.6%
Large farms	4.8% ± 2.5%	Large farms	.8% ± 1.9%
All farms	2.4% ± 1.38%		

The two groups where this factor appeared to be more significant were the large farms with low production and the small farms with

high production. The reason this would be true for the first group is fairly obvious. A large farm having low-producing cows needs diversity to build up income. But why the income of small farms with high-producing cows would be more influenced by diversity than small farms with low-producing cows is not so clear. Did these farms carry their efforts to get high milk production beyond the point of increasing unit costs?

The three following factors appeared to add the amounts indicated to the sums earned per one hundred dollars of invested capital: above average production per cow, $4.90; less specialization in milk production, $2.40; above average size, $1.40. Size, however, did not appear to be associated in any significant way with income in any of the subgroups.

When Earnings Are Measured by Labor and Management Wage

Influence of size of farm. Size of farm had more effect on the labor and management wage derived from the farm as a whole than on rate earned on investment. In periods of good earnings this is usually true. This measure of income averaged $1,436 higher on the farms that were above average in size than on those below average; it averaged $1,365 higher on farms with above-average milk production per cow, and it averaged $532 higher on farms that were less specialized in dairying than on those that were more specialized.

The differences in labor and management wage (farm basis) for large over small farms were as follows:

	Number of farms	*Difference in labor and management wage*
Low production per cow, more specialized		
Large farms	6	$1 782 ± 724
Small farms	16	1 687 ± 326
Difference		$ 95 ± 794
High production per cow, more specialized		
Large farms	17	$4 519 ± 570
Small farms	15	2 477 ± 403
Difference		$2 042 ± 698
Low production per cow, less specialized		
Large farms	19	$3 512 ± 468
Small farms	15	1 992 ± 314
Difference		$1 520 ± 564
High production per cow, less specialized		
Large farms	15	$4 151 ± 414
Small farms	10	3 827 ± 664
Difference		$ 324 ± 783
All farms		
Large	57	$3 798 ± 281
Small	56	2 362 ± 222
Difference		$1 436 ± 358

Size was apparently a significant factor in increasing labor income only on the less specialized farms with low production per cow and on the highly specialized farms with high production per cow. On the highly specialized farms with low production per cow, size made no significant difference in labor earnings; nor did it make any difference on the less specialized farms with high production per cow.

Influence of milk production per cow. The differences in the operator's labor and management wage on farms with high production per cow over those with low production were as follows:

	Difference in labor and management wage		*Difference in labor and management wage*
More specialized farms		Less specialized farms	
Small	$ 790 ± $519	Small	$1 835 ± $735
Large	2 737 ± 921	Large	639 ± 624
All farms	$1 365 ± $360		

High production per cow resulted in larger increases in labor earnings on the large, highly specialized dairy farms than on the small, highly specialized farms, and on the small, less specialized farms than on the large, less specialized farms.

Influence of degree of specialization. The operator's labor and management wage on farms having a low degree of specialization exceeded that on farms with a high degree of specialization by the following amounts:

	Difference in labor and management wage		*Difference in labor and management wage*
Low production per cow		High production per cow	
Small farms	$ 305 ± $453	Small farms	$1 350 ± $777
Large farms	1 730 ± 862	Large farms	− 368 ± 704
All farms	$552 ± $382		

The large farms with low production per cow and the small farms with high production per cow showed the greatest increases as a result of low specialization.

Small farms with low production per cow and high specialization had the lowest labor earnings. Large farms with high production per cow and with high specialization in milk sales had the highest labor earnings. Earnings of groups between these extremes were intermediate.

It will be noted that a difference of one favorable factor did not cause a significant difference in labor income. Likewise, when two factors were favorable, the addition of the third factor did not cause a significant change in earnings.

TABLE 48.—COMPARATIVE SOURCES OF INCOME ON 54 HIGHLY SPECIALIZED DAIRY FARMS AND 59 LESS SPECIALIZED DAIRY FARMS, 1942

Source of income	Highly specialized dairy farms (54)		Less specialized dairy farms (59)	
		perct.		*perct.*
Cash receipts from sales				
Dairy products	$4 753	74.7	$3 763	51.5
Dairy cattle	681	10.7	990	13.6
Beef cattle	0	0	14	.2
Hogs	251	3.9	1 037	14.2
Sheep	3	(a)	29	.4
Poultry	45	.7	82	1.1
Eggs	133	2.1	268	3.7
Feed and grain	169	2.7	485	6.6
AAA receipts	200	3.1	254	3.5
Labor off farm	5	.1	35	.5
Other	125	2.0	347	4.7
Total	$6 365	100	$7 304	100

[a]Less than .05 percent.

The less specialized dairy farms showed considerably lower receipts from the sale of dairy products and considerably higher receipts from the sale of hogs, feed and grain, dairy cattle, and miscellaneous sources of income than did the more specialized dairy farms (Table 48). The less specialized farms had $939 larger total receipts—$990 less from the sale of dairy products but $1,929 more from other sources.

METHODS OF SELECTING SAMPLE AND COLLECTING DATA

The farms and operators included in this study were selected in as unbiased and representative manner as was felt to be practical. Every tenth name was selected from the listing sheets of the farms in the county prepared by the Agricultural Adjustment Agency. The townships were selected in alphabetical order. In the first township the names of the operators opposite all numbers ending in one (1, 11, 21, etc.) were taken; in the second township, all names of operators opposite numbers ending in two (2, 12, 22, etc.) were taken, and so on.

In 1940 owing to bad weather and lack of time, records in four townships in the western part of the county were incomplete, no records in one township, and records in only parts of the others being obtained. In 1941, however, it was possible to cover the entire county and to get in touch with all the farmers who had cooperated in 1940. The 1941 survey, therefore, provided the most complete coverage of the county.

In 1942 each cooperator of the previous year was contacted. Changes in locations of operators and refusal of some cooperators, particularly

those who had small debts, to again cooperate reduced the number included in the study and made the data somewhat less representative than those for the previous year.

The enumerator filled out a survey form with information which the farmer supplied on the basis of estimates or of records. When an operator's record concerning receipts from the sale of milk was incomplete, the enumerator obtained information from the dealer who bought the milk. When an operator's record of his debts was incomplete, some information was obtained from the lenders.

Four circumstances connected with the selection of farms may have affected the representativeness of this study: (1) Very small farms located close to the several cities and villages in the county were omitted because the operators of these farms were reluctant to cooperate. (2) All farms on the selected list which were operated by hired managers and absentee owners were omitted. (3) Because of inclement weather in 1940-41, the west half of Chenung, Dunham, and Marengo townships, as well as all of Riley township (these four constituting the western tier of townships in the county), was not surveyed. (4) The fact that some cooperators moved during the period covered and some refused to give information for the second or third year may have detracted from the representative character of the sample. Nevertheless it is believed that the data presented here represent a typical group of farms and farmers.

Comparisons with U. S. Census data. In order to ascertain how representative the sample was of all farms in McHenry county, some of the data collected in this study were compared with 1940 U.S. Census data (Table 49). Except for the part-owner group, the percent of farms in each tenure group did not vary greatly in the sample from that shown by the Census.

TABLE 49.—COMPARISON OF ITEMS AS REPORTED IN 1940 U. S. CENSUS OF AGRICULTURE[a] AND IN THIS STUDY: MCHENRY COUNTY, ILLINOIS, 1940

Item	Owners		Part owners		Tenants		All farms	
	Census	This study	Census	This study	Census	This study	Census	This study
Percent of operators in tenure class	40.7	37.1	6.3	12.0	49.3	50.8	....	....
Acres per farm	105.1	138.0	190.9	201.0	150.2	161.0	138.0	158.0
Value of land and buildings per acre	$ 112	$ 120	....	....	....	....	....	....
Value of machinery and implements per farm	$1 060	$1 817	$1 736	$2 361	$1 251	$1 764	$1 180	$1 856

[a]Sixteenth U. S. Census, 1940.

The average acreage per farm in the sample was somewhat larger than the average in the Census, particularly for owner-operated farms. This larger size is partially explained by the omission from the sample of various small farms around urban centers—farms which were enumerated in the Census.

While the value of land and buildings per acre for owner farms did not differ greatly between the two groups, the value of machinery and equipment averaged significantly higher in the surveyed sample than in the Census farms. This higher average value of machinery and equipment reflects the larger size of the farm and may possibly also indicate a more accurate reporting of this item.

The percentages of tenants classified by kind of lease did not differ greatly between the Census enumeration and this study. The comparative figures were:

	Census, perct.	*This study, perct.*
Cash lease only	63.7	60.3
Cash and share lease	2.6	3.2
Share lease only	28.2	36.5
Total land under lease	57.4	59.5

GENERAL SUMMARY

The financial positions and operations of a group of representative farmers in McHenry county, Illinois, was studied in 1940-1942 inclusive by the survey method. These farms are typical of dairy farms in northern Illinois.

Farms operated by part-time operators and by absentee owners with hired managers were omitted from the study. One hundred twenty-two farmers were included in 1940, 146 in 1941, and 118 in 1942. Seventy-two farmers had kept continuous records on the same farm for all three years. The findings of this study were briefly as follows:

Capital position of operators. At the beginning of 1941 the average assets of operators who owned their farms were $24,670. The assets of part owners were $24,635; of cash and crop-share tenants, $7,780; of livestock-share tenants owning half their cows, $5,093; of livestock-share tenants owning less than half their cows, $5,137.

During the same year owners and part owners owned land and improvements worth $15,961 and had current farm assets of $6,727. The three largest items of working capital were: dairy cattle, $2,251; machinery and equipment, $1,943; and feed and feed and grain, $1,656. The tenants had average working capital of $5,548, largely invested in the three items just mentioned.

While about four-fifths of the operators of the farms included in this study were using some borrowed funds during 1940-1942 in connection with their farm businesses, the entire group of operators owned a high proportion of their capital outright. On December 31, 1941, livestock-share tenants owning less than half the cows had equities of 93 percent in their farm businesses; cash tenants had equities of 79 percent; full owners, 78 percent; livestock-share tenants owning cows on a 50-50 basis with landlords, 75 percent; part owners, 68 percent.

Financial progress. The period from 1940 to 1942 was one of capital accumulation. In each year the farmers in each tenure class added to the farming assets invested in their businesses. Increases in assets on owner- and tenant-operated farms were about equal, on the average. The tenants expanded their debts in 1940 and 1941 and reduced them only moderately in 1942, while the owners were reducing their debts thruout the period.

Owners' increases in net worth, including apparent changes in cash, were larger than tenants' increases, but on a percentage basis the tenants increased their net worth much more rapidly. At the prevailing rate of return on capital, it obviously paid these tenants in this period to expand their assets by further borrowing.

In the combined owner and part-owner group, the more heavily indebted farmers tended to operate the larger businesses. The reverse was true among the tenants. The more heavily indebted owners made more rapid financial progress, both in accumulating assets and in paying debts than did the less heavily indebted group. This rapid financial progress by the more heavily indebted owners partly reflects their larger volume of business. The relationship was not so clear-cut for the tenants, but those with debt ratios of 40 percent and over increased their net worth by an average of one-third to one-half in each of the three years.

The larger the farm business, the greater the financial progress made in this period.

Three-year continuous records. When the records kept by 72 farmers for three consecutive years on the same farms were studied, the same general tendencies were found in the capital position of operators and in cash income and expense patterns as were indicated by the complete samples. The principal change in the physical size of the business of these farms between 1940 and 1942 was an increase of 20 acres in the farms operated by part owners and of 9 acres in those operated by cash tenants, and a general increase in the number of dairy cows on all classes of farms. No general increase occurred in the num-

ber of hogs or poultry, the expansion being in milk, the principal product of the area, even tho the price of milk had not increased as much as the price of hogs. Most of the increase in the value of assets resulted from higher valuations of livestock and of feed and grain.

Cash income and expense patterns. Two-thirds to three-fourths of the income on the farms studied came from the sale of milk and livestock, chiefly dairy cattle. Crop sales were not important.

Net new borrowings during the year (borrowings less repayments on new loans) indicate the extent to which these operators depended on current borrowings for working capital. Expressed as a percentage of current receipts, net new borrowings during each of these three years averaged for owners 3.7 to 6.9 percent; for part owners, 2.4 to 8.4 percent; for cash tenants, 9.4 to 17.1 percent; for livestock-share tenants, 7.1 to 13.7 percent. Such borrowing declined in importance during the period.

The most important expenses were those for current farm operations and for family living. The purchase of capital items other than livestock made up from one-sixth to one-third of the total expense in the various tenure groups. Livestock purchases varied from 3 percent to 16 percent of total expenses in the different groups. Payment of interest represented from 5 to 7 percent of the expenses of owners and part owners but from less than 1 percent to 3 percent of the expenses of tenants.

There appeared to be an increase in the cash resources of these operators over the period; in 1940, a rather small increase; in 1942, an increase of considerable magnitude, particularly among the owners and part owners.

The income and expenditure patterns were not greatly affected by the ratio of debt to property.

Possibilities of buying farms from earnings. The amount of accumulated cash that could have been used for farm expansion (purchase of land and improvements) increased more than proportionally for both owners and tenants as the size of the farm increased. Continued over a series of years, the net earnings of the average operator of a large farm during this three-year period would enable him to pay for a farm the size he was operating much more quickly than the earnings of the operator of a small farm would enable him to pay for one the size he was operating.

Some characteristics of these farms and their operators. The tenants operated larger farms than the owners and operated them with somewhat less labor. They obtained lower production per cow and lower

crop yields, maintained more heavily stocked farms, bought a larger percentage of their cows, and were on the average five years younger than the owners. Share tenants operated larger and more heavily stocked farms than cash tenants.

On owner farms the percentage of crop acres in soil-depleting crops showed no relation to debt ratio. The high-debt tenants had smaller herds and in general lower-producing cows than the low-debt tenants. They also bought a larger percentage of their cows, thus keeping more of their limited capital in income-producing assets. Among tenants, the younger operators, on the average, had the higher debt ratios.

The owners of small farms operated farms more heavily stocked, purchased more of their cows, and in two out of three years had lower production per cow than the owners of large farms. The larger tenant farms had higher production per cow than the smaller farms, and in 1941 and 1942 were more heavily stocked. The ages of the tenants were not correlated with the size of their farms, but among owners the smaller farms were operated by the older men.

Milk production. On the 72 farms for which records were available for all three years the average production of milk increased about 10.7 percent in 1941 over 1940, and about 1.9 percent in 1942 over 1941. In general, the larger and more heavily indebted farms increased production by larger amounts in response to wartime demands than did the smaller and more lightly indebted farms.

Farm earnings. These farms were profitable in 1942. Those operated by owners and part owners showed earnings of 13.6 percent on total capital; the tenant-operated farms showed 13.8 percent. Labor and management wages averaged about $3,000 per farm. The highest earnings were in the group in which the landlord furnished more than half the cows; in this group the rate earned was 19.1 percent and the farm labor and management wage was $5,473. This was an outstanding group of farms, to which the landlords apparently gave close supervision. The operator's labor and management wage on these farms averaged $3,264.

On the tenant-operated farms the rate earned on the tenant's capital averaged 33.4 percent; his labor and management wage averaged $2,602. The rate earned on the landlord's capital was 11.4 percent on share-rented farms, 3.5 percent on cash-rented farms, and 4 percent on part-owner farms. These percentages illustrate the tendency of returns to landlords who rent for cash to lag when prices rise.

Kinds of credit and how used. The amount of long-term debts owed by these farmers was about three times as large as the amount

of short-term debts. Short-term debts were secured chiefly by personal notes and chattel mortgages. The principal long-term creditors were the Federal Land Bank, the Land Bank Commissioner, insurance companies, and individuals. The principal short-term creditors were commercial banks, individuals, the Production Credit Association, and the Farm Security administration. During the period of the study, individuals became less important as sources of short-term loans.

New long-term borrowings of owners were chiefly for refinancing; those of tenants were chiefly for buying land. Short-term borrowings of owners were for current operations, farm equipment, dairy cattle, and automobiles and trucks; those of tenants were for the first three purposes—current operations and the purchase of farm equipment and dairy cattle.

Owners were reducing their debts in this period, and tenants were increasing theirs until 1942, when they also reduced their short-term debts. However, borrowing to buy land offset reduction in short-term debts and kept the total debts of tenants about static. It is likely that for the duration of the war new credits in this area will be used increasingly for the purchase of land and for machinery and equipment when these items become available in larger quantities.

FINDINGS IN BRIEF

Credit was widely used in 1940-1942 by this group of McHenry county farmers, and apparently it was readily available.

All tenure groups—owners, part owners, and tenants—were increasing their assets during this period; and owners were cutting down their debts. By 1942 tenants also were tending to reduce their debts, and all groups were adding to their holdings of cash.

The owners of the larger farms were somewhat more heavily in debt during this period, but they were making more rapid financial progress than the owners of the smaller farms.

The more heavily indebted tenants operated smaller businesses than the less heavily indebted tenants, but they were younger men and made considerable financial progress.

In this period of rising incomes it paid these farmers to operate on the largest possible scale and to borrow, if necessary, to get the needed capital. Expansion in the farm business was largely accomplished by milking more cows and increasing the production per cow.

By 1941 a few tenants were beginning to put cash earnings into the purchase of land.

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3050—6-45—29676

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BULLETIN. URBANA
499-513 1943-45
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